SUGRA Base Classification (excl. $\mathfrak{su}_2$, $\mathfrak{su}_3$ ext.)

$T \leq 131$. Total: 15,906 bases.

T	External	LST Gauge	Count
2	$\mathfrak{so}_8$	$--$	4
2	$\mathfrak{e}_6$	$--$	2
2	$\mathfrak{e}_7$	$--$	2
2	$\mathfrak{e}_7'$	$--$	2
2	$\mathfrak{e}_8$	$--$	2
2	$\mathfrak{f}_4$	$--$	2
2	$\hat{1}$	$--$	1
3	$\mathfrak{so}_8$	$--$	4
3	$\mathfrak{e}_6$	$--$	3
3	$\mathfrak{e}_7$	$--$	3
3	$\mathfrak{e}_7'$	$--$	3
3	$\mathfrak{e}_8$	$--$	3
3	$\mathfrak{f}_4$	$--$	3
3	$\hat{1}$	$--$	2
3	$\mathfrak{so}_{16}$	$--$	2
3	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
3	$\hat{1} \oplus \mathfrak{so}_8$	$--$	1
4	$\mathfrak{e}_6$	$\mathfrak{su}_3$	7
4	$\mathfrak{f}_4$	$\mathfrak{su}_3$	4
4	$\mathfrak{so}_8$	$--$	4
4	$\mathfrak{so}_8$	$\mathfrak{su}_3$	4
4	$\mathfrak{e}_6$	$--$	3
4	$\mathfrak{e}_7$	$--$	3
4	$\mathfrak{e}_7'$	$--$	3
4	$\mathfrak{e}_8$	$--$	3
4	$\mathfrak{f}_4$	$--$	3
4	$\hat{1}$	$--$	2
4	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
5	$\mathfrak{so}_8$	$\mathfrak{so}_8$	12
5	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
5	$\mathfrak{so}_8$	$--$	4
5	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
5	$\mathfrak{e}_6$	$--$	3
5	$\mathfrak{e}_7$	$--$	3
5	$\mathfrak{e}_7'$	$--$	3
5	$\mathfrak{e}_8$	$--$	3
5	$\mathfrak{f}_4$	$--$	3
5	$\mathfrak{e}_6$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
5	$\mathfrak{e}_6$	$\mathfrak{su}_3^2$	2
5	$\mathfrak{e}_7$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
5	$\mathfrak{e}_7'$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
5	$\mathfrak{f}_4$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
5	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
5	$\mathfrak{f}_4$	$\mathfrak{su}_3^2$	2
5	$\hat{1}$	$--$	2
5	$\mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
5	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
5	$\mathfrak{so}_8$	$\mathfrak{su}_3^2$	2
5	$\mathfrak{e}_6$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
5	$\mathfrak{e}_7$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
5	$\mathfrak{e}_7'$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
5	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
5	$\mathfrak{so}_8$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
5	$\mathfrak{so}_8$	$\mathfrak{su}_3^3$	1
5	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
6	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	5
6	$\mathfrak{f}_4$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4

T	External	LST Gauge	Count
6	$\mathfrak{so}_8$	$--$	4
6	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	4
6	$\mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
6	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3$	4
6	$\mathfrak{e}_6$	$--$	3
6	$\mathfrak{e}_6$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
6	$\mathfrak{e}_6$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
6	$\mathfrak{e}_7$	$--$	3
6	$\mathfrak{e}_7'$	$--$	3
6	$\mathfrak{e}_8$	$--$	3
6	$\mathfrak{f}_4$	$--$	3
6	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
6	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
6	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
6	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
6	$\mathfrak{e}_6$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
6	$\mathfrak{e}_6$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
6	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3$	2
6	$\mathfrak{e}_7$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
6	$\mathfrak{e}_7$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
6	$\mathfrak{e}_7$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
6	$\mathfrak{e}_7'$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
6	$\mathfrak{e}_7'$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
6	$\mathfrak{e}_7'$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
6	$\mathfrak{e}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
6	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
6	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3$	2
6	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
6	$\hat{1}$	$--$	2
6	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
6	$\mathfrak{e}_7$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
6	$\mathfrak{e}_7'$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
6	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
6	$\hat{1}$	$\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
6	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
6	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
6	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
7	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	6
7	$\mathfrak{so}_8$	$\mathfrak{so}_8^2$	6
7	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
7	$\mathfrak{so}_8$	$--$	4
7	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
7	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
7	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	4
7	$\mathfrak{e}_6$	$--$	3
7	$\mathfrak{e}_6$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{e}_7$	$--$	3
7	$\mathfrak{e}_7'$	$--$	3
7	$\mathfrak{e}_8$	$--$	3
7	$\mathfrak{f}_4$	$--$	3
7	$\mathfrak{f}_4$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3$	3
7	$\mathfrak{e}_6$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
7	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
7	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
7	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
7	$\mathfrak{e}_7$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
7	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
7	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2

T	External	LST Gauge	Count
7	$\mathfrak{e}_7'$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
7	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
7	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
7	$\mathfrak{f}_4$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
7	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
7	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
7	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
7	$\hat{1}$	$--$	2
7	$\mathfrak{so}_8$	$(\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
7	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
7	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
7	$\mathfrak{e}_6$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{e}_7$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
7	$\mathfrak{e}_7$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{e}_7'$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
7	$\mathfrak{e}_7'$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{e}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
7	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
7	$\mathfrak{f}_4$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\hat{1}$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
7	$\mathfrak{so}_8$	$\mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
7	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
7	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
8	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{so}_8$	$--$	4
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
8	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	4
8	$\mathfrak{so}_8$	$\mathfrak{so}_8^3$	4
8	$\mathfrak{e}_6$	$--$	3
8	$\mathfrak{e}_6$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
8	$\mathfrak{e}_7$	$--$	3
8	$\mathfrak{e}_7$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_7'$	$--$	3
8	$\mathfrak{e}_7'$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{e}_8$	$--$	3
8	$\mathfrak{f}_4$	$--$	3
8	$\mathfrak{f}_4$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
8	$\mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
8	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
8	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	2
8	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
8	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	2
8	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
8	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	2
8	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2

T	External	LST Gauge	Count
8	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
8	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{e}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	2
8	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	2
8	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
8	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	2
8	$\hat{1}$	$--$	2
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	2
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
8	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3$	2
8	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
8	$\mathfrak{e}_6$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
8	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
8	$\mathfrak{e}_7$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
8	$\mathfrak{e}_7'$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{e}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
8	$\mathfrak{e}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{f}_4$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
8	$\hat{1}$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
8	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
8	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	1
8	$\mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
8	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
8	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
8	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{so}_8$	$\mathfrak{so}_8^3$	6
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	5
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	5
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^2$	4
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^2$	4
9	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
9	$\mathfrak{so}_8$	$--$	4
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^2$	4
9	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
9	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
9	$\mathfrak{e}_6$	$--$	3
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
9	$\mathfrak{e}_7$	$--$	3
9	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{e}_7'$	$--$	3
9	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{e}_8$	$--$	3
9	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{f}_4$	$--$	3

T	External	LST Gauge	Count
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	3
9	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
9	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_6$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	2
9	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
9	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
9	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7'$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
9	$\mathfrak{e}_8$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{f}_4$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	2
9	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
9	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	2
9	$\hat{1}$	$--$	2
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{so}_8$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	2
9	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3$	2
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
9	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	2
9	$\mathfrak{so}_8$	$\mathfrak{so}_8^4$	2
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^4$	2
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	1
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
9	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{e}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	1
9	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\hat{1}$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
9	$\hat{1}$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
9	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	1
9	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
9	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
9	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
9	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
9	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	5
10	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	5
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	5
10	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
10	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
10	$\mathfrak{so}_8$	$--$	4
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
10	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	4
10	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	4
10	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
10	$\mathfrak{e}_6$	$--$	3
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{e}_7$	$--$	3
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{e}_7'$	$--$	3
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{e}_8$	$--$	3
10	$\mathfrak{f}_4$	$--$	3
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3

T	External	LST Gauge	Count
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	3
10	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	2
10	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	2
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{e}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	2
10	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	2
10	$\hat{1}$	$--$	2
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3$	2
10	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	1
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	1
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
10	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
10	$\mathfrak{e}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	1
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	1
10	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\hat{1}$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
10	$\hat{1}$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{su}_3^3$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
10	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
10	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
10	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
10	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
10	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$(\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
10	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^4$	6
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	5
11	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
11	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
11	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	5
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^2$	5
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	4
11	$\mathfrak{e}_6$	$--$	3
11	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
11	$\mathfrak{e}_7$	$--$	3

T	External	LST Gauge	Count
11	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{e}_7'$	$--$	3
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{e}_8$	$--$	3
11	$\mathfrak{f}_4$	$--$	3
11	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
11	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
11	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{e}_6$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
11	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
11	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3^2$	2
11	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{e}_7$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
11	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{e}_7'$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
11	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
11	$\mathfrak{e}_8$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{f}_4$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
11	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3^2$	2
11	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{so}_8$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2

T	External	LST Gauge	Count
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_3^2$	2
11	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
11	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	1
11	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
11	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^2$	1
11	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
11	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
11	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$--$	1
11	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
11	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
11	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	6
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	6
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	6
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	5
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	5
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	4
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3$	4
12	$\mathfrak{e}_6$	$--$	3
12	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{e}_7$	$--$	3
12	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
12	$\mathfrak{e}_7'$	$--$	3
12	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
12	$\mathfrak{e}_8$	$--$	3
12	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	3
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3

T	External	LST Gauge	Count
12	$\mathfrak{e}_6$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^2$	2
12	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_7$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
12	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{e}_8$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{e}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{f}_4$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^2$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
12	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
12	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
12	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{so}_8^4 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
12	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
12	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
12	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
12	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	6
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	6
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^5$	6
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	4
13	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
13	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^4$	3
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_7$	$--$	3
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
13	$\mathfrak{e}_7'$	$--$	3
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
13	$\mathfrak{e}_8$	$--$	3
13	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3

T	External	LST Gauge	Count
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^4$	3
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^4$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	3
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
13	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7$	$\mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{e}_7'$	$\mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{e}_8$	$\mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_3^2$	2
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_3^5$	2
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{e}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
13	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
13	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
13	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	10
14	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	10
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	5
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
14	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
14	$\mathfrak{so}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3$	4
14	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3

T	External	LST Gauge	Count
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_7$	$--$	3
14	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{e}_8$	$--$	3
14	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
14	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
14	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2

T	External	LST Gauge	Count
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
14	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
14	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{e}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	2
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^3$	1
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{e}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
14	$\mathfrak{e}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^3$	1
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^3$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
14	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
14	$\mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
14	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
15	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	6
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	6
15	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	6
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	6
15	$\mathfrak{so}_8$	$\mathfrak{so}_8^6$	6
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	5
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	4
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	4
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^3$	4
15	$\mathfrak{so}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
15	$\mathfrak{e}_8$	$--$	3
15	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
15	$\mathfrak{e}_6$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2

T	External	LST Gauge	Count
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_7$	$\mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_7'$	$\mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{e}_8$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_8$	$\mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
15	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
15	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2

T	External	LST Gauge	Count
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^3$	2
15	$\mathfrak{so}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_3^2$	2
15	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
15	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{e}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{f}_4$	$\mathfrak{so}_8^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
15	$\mathfrak{so}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
15	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
15	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
15	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	4
16	$\mathfrak{so}_8$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_3$	4
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
16	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	3
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
16	$\mathfrak{e}_8$	$--$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3

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16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{e}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2

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16	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2
16	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{f}_4$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	2
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
16	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
16	$\mathfrak{e}_8$	$\mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{f}_4$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
16	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
16	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
16	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	8
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	8
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	8
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	6
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	6
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	6
17	$\mathfrak{so}_8$	$\mathfrak{so}_8^7$	6
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	6
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	6
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	4
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	4
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	4
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3

T	External	LST Gauge	Count
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{e}_8$	$--$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^5$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
17	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
17	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2

T	External	LST Gauge	Count
17	$\mathfrak{e}_7$	$\mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
17	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{e}_8$	$\mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^5$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{f}_4$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
17	$\mathfrak{f}_4$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^5$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^4$	2

T	External	LST Gauge	Count
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^3$	2
17	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_3^6$	2
17	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	1
17	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_6$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
17	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1

T	External	LST Gauge	Count
17	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
17	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	8
18	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	8
18	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	8
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	8
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	8
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	6
18	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	6
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	6
18	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	6
18	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	5
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	5
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	4
18	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	3
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3

T	External	LST Gauge	Count
18	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
18	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	3
18	$\mathfrak{e}_6$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2

T	External	LST Gauge	Count
18	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
18	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{e}_8$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
18	$\mathfrak{f}_4$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	2
18	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	1
18	$\mathfrak{e}_6$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1

T	External	LST Gauge	Count
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{e}_7'$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
18	$\mathfrak{e}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
18	$\mathfrak{e}_8$	$\mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1

T	External	LST Gauge	Count
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	1
18	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
18	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
18	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	8
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	6
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	5
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	5
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	4
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	4
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	4
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^4$	4
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
19	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3

T	External	LST Gauge	Count
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
19	$\mathfrak{e}_6$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_7$	$\mathfrak{so}_8^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
19	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
19	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{e}_8$	$\mathfrak{so}_8^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2

T	External	LST Gauge	Count
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^4$	2
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
19	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_7'$	$\mathfrak{so}_8^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
19	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_8$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1

T	External	LST Gauge	Count
19	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
19	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
19	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	6
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	6
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	4
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	4
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	4
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	4
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	4
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	4
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
20	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	3
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
20	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
20	$\mathfrak{e}_6$	$\mathfrak{so}_8^8 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2

T	External	LST Gauge	Count
20	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{e}_8$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
20	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
20	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2

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20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^4$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	2
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	1
20	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_7$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
20	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
20	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{e}_8$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{e}_8$	$\mathfrak{so}_8^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
20	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	1
20	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
20	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3

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21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	3
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^6$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7$	$\mathfrak{so}_8^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
21	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2

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21	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7'$	$\mathfrak{so}_8^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{e}_8$	$\mathfrak{so}_8^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^6$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^6$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^4$	2
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_3^7$	2
21	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	1
21	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7$	$\mathfrak{so}_8^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_8$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1

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21	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
21	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	1
21	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	6
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5

T	External	LST Gauge	Count
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	3
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_7$	$\mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{e}_8$	$\mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	2
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1

T	External	LST Gauge	Count
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	1
22	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7$	$\mathfrak{so}_8^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_8$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
22	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{e}_8$	$\mathfrak{so}_8^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
22	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
22	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
22	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	6
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	6
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	6
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	6
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	6
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
23	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	4
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
23	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	4
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^5$	4
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3

T	External	LST Gauge	Count
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_7$	$\mathfrak{so}_8^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{e}_8$	$\mathfrak{so}_8^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
23	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
23	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2

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23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^5$	2
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1

T	External	LST Gauge	Count
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_8$	$\mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^3$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1

T	External	LST Gauge	Count
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
23	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
23	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
23	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
24	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
24	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
24	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	6
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	3
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	3
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	3
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3

T	External	LST Gauge	Count
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{e}_8$	$\mathfrak{so}_8^9 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
24	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
24	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	2
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2

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24	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^5$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	2
24	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
24	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{e}_8$	$\mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{e}_8$	$\mathfrak{so}_8^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1

T	External	LST Gauge	Count
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
24	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
24	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
24	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
25	$\mathfrak{e}_7$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
25	$\mathfrak{e}_7'$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
25	$\mathfrak{e}_8$	$\mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	3
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2

T	External	LST Gauge	Count
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^7$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{e}_8$	$\mathfrak{so}_8^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^7$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2

T	External	LST Gauge	Count
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^7$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^5$	2
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_3^8$	2
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	1
25	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
25	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{e}_8$	$\mathfrak{so}_8^9 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
25	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	1
25	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1

T	External	LST Gauge	Count
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
25	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	6
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	6
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	6
26	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
26	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3

T	External	LST Gauge	Count
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	3
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
26	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{e}_8$	$\mathfrak{so}_8^{10} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2

T	External	LST Gauge	Count
26	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^6$	2
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^7$	2
26	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	1
26	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1

T	External	LST Gauge	Count
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_8$	$\mathfrak{so}_8^9 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^4$	1
26	$\mathfrak{e}_8$	$\mathfrak{so}_8^9 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
26	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
26	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	5
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	5
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	5
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	4
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	4
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	4
27	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^6$	4
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	3
27	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^7$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^4$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2

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27	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^4$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^4$	2
27	$\mathfrak{e}_8$	$\mathfrak{so}_8^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2$	2
27	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{e}_8$	$\mathfrak{e}_6^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^7$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_3^6$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1

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27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^4$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{e}_8$	$\mathfrak{so}_8^{10} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^4$	1
27	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
27	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
27	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3$	4
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	3
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3

T	External	LST Gauge	Count
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	3
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^8$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^6$	2
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{e}_8$	$\mathfrak{so}_8^{11} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2$	2
28	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^8$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^6$	2
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2

T	External	LST Gauge	Count
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^6$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	2
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
28	$\mathfrak{e}_8$	$\mathfrak{so}_8^{10} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{e}_8$	$\mathfrak{so}_8^{10} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
28	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	6
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	6
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	5
29	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	4
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	4
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	4

T	External	LST Gauge	Count
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	4
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3$	4
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	4
29	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	3
29	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^7$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^8$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2

T	External	LST Gauge	Count
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^7$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^8$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^6$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^2$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
29	$\mathfrak{so}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_3^9$	2
29	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^7$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1

T	External	LST Gauge	Count
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	1
29	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	1
29	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_8$	$\mathfrak{so}_8^{11} \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
29	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1

T	External	LST Gauge	Count
29	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^7$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
29	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
30	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
30	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
30	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
30	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
30	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
30	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
30	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
30	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	3
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	3
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
30	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	3
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
30	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
30	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^7$	2
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^7$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
30	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^5$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^7$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
30	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	1
30	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
31	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	4
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
31	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
31	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^7$	4
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	4
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	3
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
31	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^8$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2

T	External	LST Gauge	Count
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^5$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^5$	2
31	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_8$	$\mathfrak{e}_6^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^5$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4$	2
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
31	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1

T	External	LST Gauge	Count
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
31	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^5$	1
31	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
31	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
31	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	6
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	6
32	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	4
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	4
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_3^2$	4
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^8$	3
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_3^7$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_3^9$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2

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32	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{f}_4$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
32	$\mathfrak{so}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
32	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
32	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1

T	External	LST Gauge	Count
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
32	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	5
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	5
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	4
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
33	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
33	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_3^8$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_3^9$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^6$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2

T	External	LST Gauge	Count
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	2
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2
33	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
33	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
33	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^8$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1

T	External	LST Gauge	Count
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^6$	1
33	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^6$	1
33	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
33	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
33	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
34	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
34	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	3
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_3^8$	2

T	External	LST Gauge	Count
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	2
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2
34	$\mathfrak{e}_7'$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	2
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
34	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3$	2
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
34	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_3^8$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1

T	External	LST Gauge	Count
34	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_6^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
34	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^6$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
34	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
34	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
34	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	6
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	4
35	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	4
35	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	4
35	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	4
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	4
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	4
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	3
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	3
35	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2 \oplus \mathfrak{su}_3^6$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
35	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^3 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2

T	External	LST Gauge	Count
35	$\mathfrak{e}_7'$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
35	$\mathfrak{e}_8$	$\mathfrak{e}_6^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^6$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3^2$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
35	$\mathfrak{e}_6$	$\mathfrak{e}_6^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
35	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
35	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_6^7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
35	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1

T	External	LST Gauge	Count
35	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^6$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^2$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
35	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	3
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	3
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3

T	External	LST Gauge	Count
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	3
36	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
36	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	3
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	3
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	3
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
36	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
36	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
36	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
36	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
36	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
36	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
37	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
37	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2

T	External	LST Gauge	Count
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_6^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	2
37	$\mathfrak{e}_8$	$\mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
37	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1

T	External	LST Gauge	Count
37	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^7$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1

T	External	LST Gauge	Count
37	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{so}_8^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
37	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
38	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	4
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
38	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	4
38	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	3
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	3
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	3
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
38	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
38	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_6^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^9$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2

T	External	LST Gauge	Count
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
38	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	2
38	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^3$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
38	$\mathfrak{e}_6$	$\mathfrak{e}_6^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
38	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
38	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
38	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^7$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_6^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
38	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
39	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	5
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	4
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3

T	External	LST Gauge	Count
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
39	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	3
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^4$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^3$	2
39	$\mathfrak{e}_8$	$\mathfrak{e}_6^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^7$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^4$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_3^4$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
39	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
39	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_6^8 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
39	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
39	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^7$	1
39	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
39	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
39	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	5
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	5
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	5
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	5
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5$	4
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
40	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	3
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	3

T	External	LST Gauge	Count
40	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	3
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
40	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
40	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2
40	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	2
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
40	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
40	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
40	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
40	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	5
41	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	4
41	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
41	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
41	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
41	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
41	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
41	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3

T	External	LST Gauge	Count
41	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3^2$	2
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
41	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
41	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^4 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
41	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
41	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
41	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
41	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	1
41	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1

T	External	LST Gauge	Count
41	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
41	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
41	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	5
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
42	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
42	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
42	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	3
42	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	3
42	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	3
42	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
42	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
42	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	3
42	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
42	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2

T	External	LST Gauge	Count
42	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
42	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	2
42	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
42	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
42	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	1
42	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
42	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^8$	1
42	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
42	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1

T	External	LST Gauge	Count
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
42	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
43	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	4
43	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	3
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	3
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	3
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
43	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_7^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3^2$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
43	$\mathfrak{e}_8$	$\mathfrak{e}_6^7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^8$	2
43	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2

T	External	LST Gauge	Count
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
43	$\mathfrak{so}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_6$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
43	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^8$	1
43	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	1
43	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
43	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
43	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	4
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	4
44	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_3^2$	4
44	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	3
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	3
44	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
44	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	3
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	3
44	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
44	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
44	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
44	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	2
44	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
44	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
44	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
44	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
44	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3^2$	1
44	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
44	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
44	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	1
44	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
44	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
44	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	4
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
45	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	3
45	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	2
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2

T	External	LST Gauge	Count
45	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
45	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	2
45	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^4$	2
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	2
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^2 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	2
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
45	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
45	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	1

T	External	LST Gauge	Count
45	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
45	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	5
46	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	5
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	4
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	4
46	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
46	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
46	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	2
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
46	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{11}$	2
46	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
46	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
46	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
46	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
46	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
46	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3$	2
46	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

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46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
46	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_6^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^9$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
46	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
46	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	4
47	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
47	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4

T	External	LST Gauge	Count
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	4
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	4
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^5 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	3
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	3
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	3
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	3
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^5 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
47	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^9$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	1

T	External	LST Gauge	Count
47	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
47	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	6
48	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	6
48	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	3
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	3
48	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
48	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
48	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	3
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
48	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	3
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
48	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
48	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
48	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
48	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	2
48	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
48	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
48	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	2
48	$\mathfrak{e}_6$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1

T	External	LST Gauge	Count
48	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
48	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
48	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
48	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
49	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
49	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
49	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	3
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
49	$\mathfrak{e}_8$	$\mathfrak{e}_6^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	2
49	$\mathfrak{e}_8$	$\mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
49	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	2
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_6^9 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{11}$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
49	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	4
50	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	4

T	External	LST Gauge	Count
50	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	3
50	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
50	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
50	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
50	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
50	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
50	$\mathfrak{e}_8$	$\mathfrak{e}_6^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{12}$	2
50	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	2
50	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	2
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
50	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^3$	2
50	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	2
50	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_6^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{11}$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_6^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^{10}$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1

T	External	LST Gauge	Count
50	$\mathfrak{e}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
50	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	4
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
51	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	3
51	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	3
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	3
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
51	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	3
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	3
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
51	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^4$	2
51	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7'^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
51	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
51	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
51	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
51	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^5$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
51	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^4$	2
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
51	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
51	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_3^4$	2
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
51	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
51	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
51	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
51	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	5
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7$	4
52	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
52	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
52	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
52	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
52	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
52	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
52	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
52	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
52	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
52	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
52	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
52	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	2
52	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
52	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7'^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
52	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7^6 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
52	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1

T	External	LST Gauge	Count
52	$\mathfrak{f}_4$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
52	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
52	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	5
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	5
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	5
53	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	4
53	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	4
53	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3$	4
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
53	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	3
53	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
53	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
53	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
53	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
53	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
53	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
53	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
53	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
53	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
53	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
53	$\mathfrak{e}_6$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7'$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
53	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
53	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
53	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
53	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
54	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
54	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
54	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	3
54	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	3
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	3
54	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
54	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
54	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
54	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
54	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
54	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
54	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
54	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
54	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
54	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
54	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
54	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
54	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
54	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
54	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
54	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
54	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	4
55	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	4
55	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	4
55	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	4
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	4
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
55	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
55	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^3 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8$	2
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
55	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus \mathfrak{so}_8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
55	$\mathfrak{e}_7$	$\mathfrak{e}_7^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
55	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
55	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
55	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1

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55	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
55	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
55	$\mathfrak{e}_8 \oplus \mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	4
56	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	4
56	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_3^2$	4
56	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	3
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
56	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
56	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
56	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
56	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
56	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	1
56	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^7 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
56	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	3
57	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	3

T	External	LST Gauge	Count
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	3
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	2
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^3 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^6 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
57	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{f}_4^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^6$	2
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	2
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
57	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
57	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
58	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	3
58	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	3
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
58	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
58	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
58	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
58	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_7^7 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
58	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
58	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	4
59	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
59	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
59	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	4
59	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	4
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^7 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
59	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	3
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
59	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
59	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
59	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
59	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
59	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1

T	External	LST Gauge	Count
59	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
59	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
59	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
59	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
59	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^2$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
59	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
59	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	3
60	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	3
60	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	3
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
60	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
60	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	2
60	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
60	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
60	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
60	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	2
60	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1

T	External	LST Gauge	Count
60	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
60	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
60	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
60	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
60	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
60	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	3
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
61	$\mathfrak{e}_8$	$\mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
61	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
61	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
61	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
61	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
61	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
61	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
61	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
61	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	1
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
61	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	4
62	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	4
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	3
62	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
62	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	2
62	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
62	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
62	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
62	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	2
62	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	2
62	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^3$	2

T	External	LST Gauge	Count
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^7$	1
62	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^8 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
62	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
62	$\mathfrak{so}_8$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	4
63	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	3
63	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	3
63	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
63	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^4$	2
63	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
63	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
63	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
63	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
63	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
63	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_3^4$	2
63	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
63	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
63	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
63	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
63	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
63	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
63	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
63	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1

T	External	LST Gauge	Count
63	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	1
63	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9$	4
64	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
64	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
64	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	3
64	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
64	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
64	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
64	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
64	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	2
64	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
64	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
64	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7^8 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
64	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
64	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
64	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
64	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
64	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
64	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	5
65	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	4

T	External	LST Gauge	Count
65	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	4
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3$	4
65	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
65	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	3
65	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
65	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
65	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
65	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
65	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
65	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
65	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
65	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
65	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
65	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	1
65	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
65	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{e}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
65	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
66	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
66	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
66	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
66	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
66	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	3
66	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	3
66	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	3
66	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
66	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
66	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
66	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8$	2
66	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
66	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
66	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
66	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
66	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
66	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	2
66	$\mathfrak{so}_8$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
66	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
66	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
66	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
66	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1

T	External	LST Gauge	Count
66	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
66	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
66	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
66	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
66	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
66	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
66	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
66	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
66	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
66	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
66	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	4
67	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	4
67	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	4
67	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	2
67	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
67	$\mathfrak{f}_4$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^4$	2
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^4 \oplus \mathfrak{so}_8^4 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10}$	2
67	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
67	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
67	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
67	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
67	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
67	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
67	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
67	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
67	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{f}_4^2 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^8 \oplus \mathfrak{su}_3$	1
67	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
67	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
67	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
67	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	4
68	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	4
68	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_3^2$	4
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
68	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	2
68	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
68	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
68	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_6$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
68	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
68	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
68	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
68	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7^9 \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
68	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
68	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
68	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
68	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^3 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
68	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
68	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{e}_8$	$\mathfrak{e}_7^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	3
69	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	3
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	2
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
69	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
69	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^4 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^8 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
69	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
69	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
69	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
69	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
69	$\mathfrak{e}_8$	$\mathfrak{e}_7^9 \oplus \mathfrak{e}_7' \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9$	1
69	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
69	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
69	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
69	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
69	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
69	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
69	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

T	External	LST Gauge	Count
69	$\mathfrak{so}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	1
69	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
70	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
70	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	4
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
70	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
70	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3$	2
70	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
70	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
70	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
70	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
70	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
70	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
70	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
70	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
70	$\mathfrak{e}_8$	$\mathfrak{e}_7^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^9 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{e}_8$	$\mathfrak{e}_7^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^{10}$	1
70	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
70	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
70	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
70	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
70	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
70	$\mathfrak{f}_4$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
70	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
70	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
70	$\mathfrak{so}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	4
71	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
71	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
71	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	4
71	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^9 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
71	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	3
71	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
71	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
71	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
71	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
71	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
71	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
71	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
71	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1

T	External	LST Gauge	Count
71	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
71	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_8$	$\mathfrak{e}_7^{10} \oplus \mathfrak{f}_4 \oplus \mathfrak{so}_8 \oplus \mathfrak{sp}_1 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^{10}$	1
71	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^2$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
71	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
71	$\mathfrak{so}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	3
72	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
72	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
72	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
72	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
72	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
72	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
72	$\mathfrak{so}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	2
72	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
72	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
72	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
72	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
72	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
72	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
72	$\mathfrak{f}_4$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	1
73	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
73	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
73	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
73	$\mathfrak{e}_8$	$\mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
73	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2

T	External	LST Gauge	Count
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
73	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	2
73	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
73	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
73	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
73	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
73	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
73	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
73	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
73	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
73	$\mathfrak{e}_7'$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
73	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
73	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
73	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
73	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	1
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
73	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	4
74	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	4
74	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	2
74	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
74	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
74	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
74	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^3$	2
74	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
74	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
74	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
74	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
74	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
74	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
74	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
74	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
74	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
74	$\mathfrak{f}_4$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
75	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	4

T	External	LST Gauge	Count
75	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
75	$\mathfrak{e}_6$	$\mathfrak{e}_6^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_3^4$	2
75	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
75	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
75	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
75	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
75	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
75	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
75	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
75	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
75	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
75	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
75	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
75	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
75	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	1
75	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
75	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
75	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
75	$\mathfrak{f}_4$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	1
76	$\mathfrak{so}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11}$	4
76	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	3
76	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	2
76	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	2
76	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3$	2
76	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
76	$\mathfrak{e}_6$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
76	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
76	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
76	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
76	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
76	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
76	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
76	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
76	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
76	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
76	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
77	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3$	4
77	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
77	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
77	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	2
77	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_3^2$	1
77	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
77	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^5 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	1
77	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
77	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
78	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
78	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4

T	External	LST Gauge	Count
78	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
78	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
78	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
78	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
78	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
78	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
78	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
78	$\mathfrak{e}_7'$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
78	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
78	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
79	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	4
79	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12}$	4
79	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
79	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
79	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
79	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
79	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
79	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
79	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
79	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
79	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
79	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
79	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
79	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
79	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
79	$\mathfrak{f}_4$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_3^2$	4
80	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
80	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
80	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
80	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_7'$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
80	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
80	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
80	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
80	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
80	$\mathfrak{f}_4$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^5 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{10} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus (\mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2)^2$	2
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
81	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^3$	1
81	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
81	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
81	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
81	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
81	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
81	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
81	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
81	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
81	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
81	$\mathfrak{f}_4$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1

T	External	LST Gauge	Count
81	$\mathfrak{so}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
82	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	2
82	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
82	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^3$	1
82	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
82	$\mathfrak{e}_6$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
82	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
82	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
82	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
82	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
82	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
82	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
82	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
82	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
82	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
82	$\mathfrak{so}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13}$	1
83	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
83	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{11} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
83	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
83	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^3$	1
83	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^2$	1
83	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
83	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
83	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
83	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
83	$\mathfrak{e}_7'$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
83	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
83	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	2
84	$\mathfrak{e}_6$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
84	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^3$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
84	$\mathfrak{e}_7$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
84	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
84	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
84	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
84	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
84	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
84	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
84	$\mathfrak{f}_4$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
84	$\mathfrak{so}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
85	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3$	2
85	$\mathfrak{e}_8$	$\mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	2
85	$\mathfrak{e}_6$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
85	$\mathfrak{e}_6$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_3^3$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3^2$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
85	$\mathfrak{e}_7'$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
85	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
85	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1

T	External	LST Gauge	Count
85	$\mathfrak{f}_4$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
85	$\mathfrak{so}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	2
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
86	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
86	$\mathfrak{e}_6$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
86	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
86	$\mathfrak{e}_7'$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
86	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
86	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^6 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
86	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_3^2$	1
86	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{f}_4$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
86	$\mathfrak{so}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	1
87	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
87	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	2
87	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3$	1
87	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
87	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
87	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
88	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
88	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
88	$\mathfrak{e}_7'$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
88	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
89	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	2
89	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
89	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
89	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
90	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	4
90	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
90	$\mathfrak{e}_7$	$\mathfrak{e}_6 \oplus \mathfrak{e}_7 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3^2$	1
90	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_7' \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
91	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14}$	4
91	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
91	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	2
91	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
91	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
91	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
92	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
92	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
92	$\mathfrak{e}_7$	$\mathfrak{e}_7^2 \oplus \mathfrak{e}_8^6 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{12} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^3 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
92	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
92	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
92	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
92	$\mathfrak{f}_4$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
92	$\mathfrak{so}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
93	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
93	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
93	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
93	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
93	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
93	$\mathfrak{so}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
94	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	2

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94	$\mathfrak{e}_7$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_3$	1
94	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
94	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
94	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15}$	1
95	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{13} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	4
95	$\mathfrak{e}_6$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
95	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
95	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
95	$\mathfrak{f}_4$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
95	$\mathfrak{so}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
96	$\mathfrak{e}_6$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{e}_7$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
96	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
96	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
96	$\mathfrak{e}_7'$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	1
96	$\mathfrak{f}_4$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
96	$\mathfrak{so}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
97	$\mathfrak{e}_8$	$\mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	2
97	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3$	2
97	$\mathfrak{e}_6$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{e}_7$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
97	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^7 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
97	$\mathfrak{e}_7'$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
97	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{f}_4$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
97	$\mathfrak{so}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
98	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
98	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
98	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
98	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_3^2$	1
98	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	1
99	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
99	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	2
99	$\mathfrak{e}_7$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{14} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2 \oplus \mathfrak{su}_3$	1
100	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
101	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^7 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{15} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
103	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{16}$	4
104	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
104	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17}$	1
104	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
105	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17}$	1
105	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
106	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17}$	2
106	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
106	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
106	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^8 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17}$	1
107	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
107	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
108	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
108	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1

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108	$\mathfrak{e}_8$	$\mathfrak{e}_8^8 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	1
109	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3$	2
109	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
109	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{18}$	1
110	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
110	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_3^2$	1
110	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{18}$	1
111	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
111	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{18}$	2
112	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus (\mathfrak{su}_2 \oplus \mathfrak{g}_2)^2$	1
113	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^8 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{17} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2 \oplus \mathfrak{su}_2 \oplus \mathfrak{so}_7 \oplus \mathfrak{su}_2$	1
115	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{18}$	4
116	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
116	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19}$	1
116	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
117	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19}$	1
117	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
118	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19}$	2
118	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
118	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
118	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^9 \oplus \mathfrak{so}_8^2 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19}$	1
119	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
119	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
120	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{11} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
120	$\mathfrak{e}_8$	$\mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{11} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	1
121	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3$	2
121	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
121	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{20}$	1
122	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
122	$\mathfrak{e}_8$	$\mathfrak{e}_6 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_3^2$	1
122	$\mathfrak{e}_8$	$\mathfrak{e}_7' \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{20}$	1
123	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{19} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	2
123	$\mathfrak{e}_8$	$\mathfrak{e}_7 \oplus \mathfrak{e}_8^9 \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{20}$	2
127	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{20}$	4
128	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{21} \oplus \mathfrak{su}_3$	1
128	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{10} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{21} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
129	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{10} \oplus \mathfrak{so}_8 \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{21} \oplus \mathfrak{su}_3$	1
130	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{11} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{21} \oplus \mathfrak{su}_2 \oplus \mathfrak{g}_2$	1
130	$\mathfrak{e}_8$	$\mathfrak{e}_8^{10} \oplus \mathfrak{f}_4^{11} \oplus (\mathfrak{sp}_1 \oplus \mathfrak{g}_2)^{21} \oplus \mathfrak{su}_3$	1