

表 1 rank 0

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
1	$A_1$	A1	—	—	$\mathbb{Q}_0^{(h,A_1)}$	$\text{Qh}(0, \text{A1}, , )$	$C_0$

表 2 rank 1

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
2	$A_2$	A2	—	—	$\mathbb{Q}_1^{(h,A_2)}$	$\text{Qh}(1, \text{A2}, , )$	$C_0$
3	$E$	E	—	0	$\mathbb{Q}_{1,0}^{(h,E)}$	$\text{Qh}(1, \text{E}, , 0)$	$C_1$
4	$E$	E	—	1	$\mathbb{Q}_{1,1}^{(h,E)}$	$\text{Qh}(1, \text{E}, , 1)$	$S_1$

表 3 rank 2

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
5	$A_1$	A1	—	—	$\mathbb{Q}_2^{(h,A_1)}$	$\text{Qh}(2, \text{A1}, , )$	$C_0$
6	$E$	E	1	0	$\mathbb{Q}_{2,0}^{(h,E,1)}$	$\text{Qh}(2, \text{E}, 1, 0)$	$S_1$
7	$E$	E	1	1	$\mathbb{Q}_{2,1}^{(h,E,1)}$	$\text{Qh}(2, \text{E}, 1, 1)$	$-C_1$
8	$E$	E	2	0	$\mathbb{Q}_{2,0}^{(h,E,2)}$	$\text{Qh}(2, \text{E}, 2, 0)$	$C_2$
9	$E$	E	2	1	$\mathbb{Q}_{2,1}^{(h,E,2)}$	$\text{Qh}(2, \text{E}, 2, 1)$	$-S_2$

表 4 rank 3

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
10	$A_1$	A1	—	—	$\mathbb{Q}_3^{(h,A_1)}$	$\text{Qh}(3, \text{A1}, , )$	$C_3$
11	$A_2$	A2	1	—	$\mathbb{Q}_3^{(h,A_2,1)}$	$\text{Qh}(3, \text{A2}, 1, )$	$C_0$
12	$A_2$	A2	2	—	$\mathbb{Q}_3^{(h,A_2,2)}$	$\text{Qh}(3, \text{A2}, 2, )$	$S_3$
13	$E$	E	1	0	$\mathbb{Q}_{3,0}^{(h,E,1)}$	$\text{Qh}(3, \text{E}, 1, 0)$	$C_1$
14	$E$	E	1	1	$\mathbb{Q}_{3,1}^{(h,E,1)}$	$\text{Qh}(3, \text{E}, 1, 1)$	$S_1$
15	$E$	E	2	0	$\mathbb{Q}_{3,0}^{(h,E,2)}$	$\text{Qh}(3, \text{E}, 2, 0)$	$-S_2$
16	$E$	E	2	1	$\mathbb{Q}_{3,1}^{(h,E,2)}$	$\text{Qh}(3, \text{E}, 2, 1)$	$-C_2$

表 5 rank 4

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
17	$A_1$	A1	1	—	$\mathbb{Q}_4^{(h,A_1,1)}$	$\text{Qh}(4, \text{A1}, 1, )$	$C_0$
18	$A_1$	A1	2	—	$\mathbb{Q}_4^{(h,A_1,2)}$	$\text{Qh}(4, \text{A1}, 2, )$	$S_3$
19	$A_2$	A2	—	—	$\mathbb{Q}_4^{(h,A_2)}$	$\text{Qh}(4, \text{A2}, , )$	$C_3$
20	$E$	E	1	0	$\mathbb{Q}_{4,0}^{(h,E,1)}$	$\text{Qh}(4, \text{E}, 1, 0)$	$S_1$
21	$E$	E	1	1	$\mathbb{Q}_{4,1}^{(h,E,1)}$	$\text{Qh}(4, \text{E}, 1, 1)$	$-C_1$
22	$E$	E	2	0	$\mathbb{Q}_{4,0}^{(h,E,2)}$	$\text{Qh}(4, \text{E}, 2, 0)$	$C_4$
23	$E$	E	2	1	$\mathbb{Q}_{4,1}^{(h,E,2)}$	$\text{Qh}(4, \text{E}, 2, 1)$	$S_4$
24	$E$	E	3	0	$\mathbb{Q}_{4,0}^{(h,E,3)}$	$\text{Qh}(4, \text{E}, 3, 0)$	$C_2$
25	$E$	E	3	1	$\mathbb{Q}_{4,1}^{(h,E,3)}$	$\text{Qh}(4, \text{E}, 3, 1)$	$-S_2$

表 6 rank 5

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
26	$A_1$	A1	—	—	$Q_5^{(h,A_1)}$	$Qh(5, A1, , )$	$C_3$
27	$A_2$	A2	1	—	$Q_5^{(h,A_2,1)}$	$Qh(5, A2, 1, )$	$C_0$
28	$A_2$	A2	2	—	$Q_5^{(h,A_2,2)}$	$Qh(5, A2, 2, )$	$S_3$
29	$E$	E	1	0	$Q_{5,0}^{(h,E,1)}$	$Qh(5, E, 1, 0)$	$C_5$
30	$E$	E	1	1	$Q_{5,1}^{(h,E,1)}$	$Qh(5, E, 1, 1)$	$-S_5$
31	$E$	E	2	0	$Q_{5,0}^{(h,E,2)}$	$Qh(5, E, 2, 0)$	$C_1$
32	$E$	E	2	1	$Q_{5,1}^{(h,E,2)}$	$Qh(5, E, 2, 1)$	$S_1$
33	$E$	E	3	0	$Q_{5,0}^{(h,E,3)}$	$Qh(5, E, 3, 0)$	$S_4$
34	$E$	E	3	1	$Q_{5,1}^{(h,E,3)}$	$Qh(5, E, 3, 1)$	$-C_4$
35	$E$	E	4	0	$Q_{5,0}^{(h,E,4)}$	$Qh(5, E, 4, 0)$	$-S_2$
36	$E$	E	4	1	$Q_{5,1}^{(h,E,4)}$	$Qh(5, E, 4, 1)$	$-C_2$

表 7 rank 6

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
37	$A_1$	A1	1	—	$Q_6^{(h,A_1,1)}$	$Qh(6, A1, 1, )$	$C_0$
38	$A_1$	A1	2	—	$Q_6^{(h,A_1,2)}$	$Qh(6, A1, 2, )$	$C_6$
39	$A_1$	A1	3	—	$Q_6^{(h,A_1,3)}$	$Qh(6, A1, 3, )$	$S_3$
40	$A_2$	A2	1	—	$Q_6^{(h,A_2,1)}$	$Qh(6, A2, 1, )$	$S_6$
41	$A_2$	A2	2	—	$Q_6^{(h,A_2,2)}$	$Qh(6, A2, 2, )$	$C_3$
42	$E$	E	1	0	$Q_{6,0}^{(h,E,1)}$	$Qh(6, E, 1, 0)$	$-S_5$
43	$E$	E	1	1	$Q_{6,1}^{(h,E,1)}$	$Qh(6, E, 1, 1)$	$-C_5$
44	$E$	E	2	0	$Q_{6,0}^{(h,E,2)}$	$Qh(6, E, 2, 0)$	$S_1$
45	$E$	E	2	1	$Q_{6,1}^{(h,E,2)}$	$Qh(6, E, 2, 1)$	$-C_1$
46	$E$	E	3	0	$Q_{6,0}^{(h,E,3)}$	$Qh(6, E, 3, 0)$	$C_4$
47	$E$	E	3	1	$Q_{6,1}^{(h,E,3)}$	$Qh(6, E, 3, 1)$	$S_4$
48	$E$	E	4	0	$Q_{6,0}^{(h,E,4)}$	$Qh(6, E, 4, 0)$	$C_2$
49	$E$	E	4	1	$Q_{6,1}^{(h,E,4)}$	$Qh(6, E, 4, 1)$	$-S_2$

表 8 rank 7

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
50	$A_1$	A1	1	—	$\mathbb{Q}_7^{(h,A_1,1)}$	$\text{Qh}(7, \text{A1}, 1, )$	$S_6$
51	$A_1$	A1	2	—	$\mathbb{Q}_7^{(h,A_1,2)}$	$\text{Qh}(7, \text{A1}, 2, )$	$C_3$
52	$A_2$	A2	1	—	$\mathbb{Q}_7^{(h,A_2,1)}$	$\text{Qh}(7, \text{A2}, 1, )$	$C_0$
53	$A_2$	A2	2	—	$\mathbb{Q}_7^{(h,A_2,2)}$	$\text{Qh}(7, \text{A2}, 2, )$	$C_6$
54	$A_2$	A2	3	—	$\mathbb{Q}_7^{(h,A_2,3)}$	$\text{Qh}(7, \text{A2}, 3, )$	$S_3$
55	$E$	E	1	0	$\mathbb{Q}_{7,0}^{(h,E,1)}$	$\text{Qh}(7, \text{E}, 1, 0)$	$C_7$
56	$E$	E	1	1	$\mathbb{Q}_{7,1}^{(h,E,1)}$	$\text{Qh}(7, \text{E}, 1, 1)$	$S_7$
57	$E$	E	2	0	$\mathbb{Q}_{7,0}^{(h,E,2)}$	$\text{Qh}(7, \text{E}, 2, 0)$	$C_5$
58	$E$	E	2	1	$\mathbb{Q}_{7,1}^{(h,E,2)}$	$\text{Qh}(7, \text{E}, 2, 1)$	$-S_5$
59	$E$	E	3	0	$\mathbb{Q}_{7,0}^{(h,E,3)}$	$\text{Qh}(7, \text{E}, 3, 0)$	$C_1$
60	$E$	E	3	1	$\mathbb{Q}_{7,1}^{(h,E,3)}$	$\text{Qh}(7, \text{E}, 3, 1)$	$S_1$
61	$E$	E	4	0	$\mathbb{Q}_{7,0}^{(h,E,4)}$	$\text{Qh}(7, \text{E}, 4, 0)$	$S_4$
62	$E$	E	4	1	$\mathbb{Q}_{7,1}^{(h,E,4)}$	$\text{Qh}(7, \text{E}, 4, 1)$	$-C_4$
63	$E$	E	5	0	$\mathbb{Q}_{7,0}^{(h,E,5)}$	$\text{Qh}(7, \text{E}, 5, 0)$	$-S_2$
64	$E$	E	5	1	$\mathbb{Q}_{7,1}^{(h,E,5)}$	$\text{Qh}(7, \text{E}, 5, 1)$	$-C_2$

表 9 rank 8

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
65	$A_1$	A1	1	—	$\mathbb{Q}_8^{(h,A_1,1)}$	$\text{Qh}(8, \text{A1}, 1, )$	$C_0$
66	$A_1$	A1	2	—	$\mathbb{Q}_8^{(h,A_1,2)}$	$\text{Qh}(8, \text{A1}, 2, )$	$C_6$
67	$A_1$	A1	3	—	$\mathbb{Q}_8^{(h,A_1,3)}$	$\text{Qh}(8, \text{A1}, 3, )$	$S_3$
68	$A_2$	A2	1	—	$\mathbb{Q}_8^{(h,A_2,1)}$	$\text{Qh}(8, \text{A2}, 1, )$	$S_6$
69	$A_2$	A2	2	—	$\mathbb{Q}_8^{(h,A_2,2)}$	$\text{Qh}(8, \text{A2}, 2, )$	$C_3$
70	$E$	E	1	0	$\mathbb{Q}_{8,0}^{(h,E,1)}$	$\text{Qh}(8, \text{E}, 1, 0)$	$S_7$
71	$E$	E	1	1	$\mathbb{Q}_{8,1}^{(h,E,1)}$	$\text{Qh}(8, \text{E}, 1, 1)$	$-C_7$
72	$E$	E	2	0	$\mathbb{Q}_{8,0}^{(h,E,2)}$	$\text{Qh}(8, \text{E}, 2, 0)$	$-S_5$
73	$E$	E	2	1	$\mathbb{Q}_{8,1}^{(h,E,2)}$	$\text{Qh}(8, \text{E}, 2, 1)$	$-C_5$
74	$E$	E	3	0	$\mathbb{Q}_{8,0}^{(h,E,3)}$	$\text{Qh}(8, \text{E}, 3, 0)$	$S_1$
75	$E$	E	3	1	$\mathbb{Q}_{8,1}^{(h,E,3)}$	$\text{Qh}(8, \text{E}, 3, 1)$	$-C_1$
76	$E$	E	4	0	$\mathbb{Q}_{8,0}^{(h,E,4)}$	$\text{Qh}(8, \text{E}, 4, 0)$	$C_8$
77	$E$	E	4	1	$\mathbb{Q}_{8,1}^{(h,E,4)}$	$\text{Qh}(8, \text{E}, 4, 1)$	$-S_8$
78	$E$	E	5	0	$\mathbb{Q}_{8,0}^{(h,E,5)}$	$\text{Qh}(8, \text{E}, 5, 0)$	$C_4$
79	$E$	E	5	1	$\mathbb{Q}_{8,1}^{(h,E,5)}$	$\text{Qh}(8, \text{E}, 5, 1)$	$S_4$
80	$E$	E	6	0	$\mathbb{Q}_{8,0}^{(h,E,6)}$	$\text{Qh}(8, \text{E}, 6, 0)$	$C_2$
81	$E$	E	6	1	$\mathbb{Q}_{8,1}^{(h,E,6)}$	$\text{Qh}(8, \text{E}, 6, 1)$	$-S_2$

表 10 rank 9

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
82	$A_1$	A1	1	—	$\mathbb{Q}_9^{(h,A_1,1)}$	Qh(9, A1, 1, )	$S_6$
83	$A_1$	A1	2	—	$\mathbb{Q}_9^{(h,A_1,2)}$	Qh(9, A1, 2, )	$C_9$
84	$A_1$	A1	3	—	$\mathbb{Q}_9^{(h,A_1,3)}$	Qh(9, A1, 3, )	$C_3$
85	$A_2$	A2	1	—	$\mathbb{Q}_9^{(h,A_2,1)}$	Qh(9, A2, 1, )	$C_0$
86	$A_2$	A2	2	—	$\mathbb{Q}_9^{(h,A_2,2)}$	Qh(9, A2, 2, )	$C_6$
87	$A_2$	A2	3	—	$\mathbb{Q}_9^{(h,A_2,3)}$	Qh(9, A2, 3, )	$S_9$
88	$A_2$	A2	4	—	$\mathbb{Q}_9^{(h,A_2,4)}$	Qh(9, A2, 4, )	$S_3$
89	$E$	E	1	0	$\mathbb{Q}_{9,0}^{(h,E,1)}$	Qh(9, E, 1, 0)	$C_7$
90	$E$	E	1	1	$\mathbb{Q}_{9,1}^{(h,E,1)}$	Qh(9, E, 1, 1)	$S_7$
91	$E$	E	2	0	$\mathbb{Q}_{9,0}^{(h,E,2)}$	Qh(9, E, 2, 0)	$C_5$
92	$E$	E	2	1	$\mathbb{Q}_{9,1}^{(h,E,2)}$	Qh(9, E, 2, 1)	$-S_5$
93	$E$	E	3	0	$\mathbb{Q}_{9,0}^{(h,E,3)}$	Qh(9, E, 3, 0)	$C_1$
94	$E$	E	3	1	$\mathbb{Q}_{9,1}^{(h,E,3)}$	Qh(9, E, 3, 1)	$S_1$
95	$E$	E	4	0	$\mathbb{Q}_{9,0}^{(h,E,4)}$	Qh(9, E, 4, 0)	$-S_8$
96	$E$	E	4	1	$\mathbb{Q}_{9,1}^{(h,E,4)}$	Qh(9, E, 4, 1)	$-C_8$
97	$E$	E	5	0	$\mathbb{Q}_{9,0}^{(h,E,5)}$	Qh(9, E, 5, 0)	$S_4$
98	$E$	E	5	1	$\mathbb{Q}_{9,1}^{(h,E,5)}$	Qh(9, E, 5, 1)	$-C_4$
99	$E$	E	6	0	$\mathbb{Q}_{9,0}^{(h,E,6)}$	Qh(9, E, 6, 0)	$-S_2$
100	$E$	E	6	1	$\mathbb{Q}_{9,1}^{(h,E,6)}$	Qh(9, E, 6, 1)	$-C_2$

表 11 rank 10

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
101	$A_1$	A1	1	—	$\mathbb{Q}_{10}^{(h,A_1,1)}$	Qh(10, A1, 1, )	$C_0$
102	$A_1$	A1	2	—	$\mathbb{Q}_{10}^{(h,A_1,2)}$	Qh(10, A1, 2, )	$C_6$
103	$A_1$	A1	3	—	$\mathbb{Q}_{10}^{(h,A_1,3)}$	Qh(10, A1, 3, )	$S_9$
104	$A_1$	A1	4	—	$\mathbb{Q}_{10}^{(h,A_1,4)}$	Qh(10, A1, 4, )	$S_3$
105	$A_2$	A2	1	—	$\mathbb{Q}_{10}^{(h,A_2,1)}$	Qh(10, A2, 1, )	$S_6$
106	$A_2$	A2	2	—	$\mathbb{Q}_{10}^{(h,A_2,2)}$	Qh(10, A2, 2, )	$C_9$
107	$A_2$	A2	3	—	$\mathbb{Q}_{10}^{(h,A_2,3)}$	Qh(10, A2, 3, )	$C_3$
108	$E$	E	1	0	$\mathbb{Q}_{10,0}^{(h,E,1)}$	Qh(10, E, 1, 0)	$S_7$
109	$E$	E	1	1	$\mathbb{Q}_{10,1}^{(h,E,1)}$	Qh(10, E, 1, 1)	$-C_7$
110	$E$	E	2	0	$\mathbb{Q}_{10,0}^{(h,E,2)}$	Qh(10, E, 2, 0)	$-S_5$
111	$E$	E	2	1	$\mathbb{Q}_{10,1}^{(h,E,2)}$	Qh(10, E, 2, 1)	$-C_5$
112	$E$	E	3	0	$\mathbb{Q}_{10,0}^{(h,E,3)}$	Qh(10, E, 3, 0)	$S_1$
113	$E$	E	3	1	$\mathbb{Q}_{10,1}^{(h,E,3)}$	Qh(10, E, 3, 1)	$-C_1$
114	$E$	E	4	0	$\mathbb{Q}_{10,0}^{(h,E,4)}$	Qh(10, E, 4, 0)	$C_{10}$
115	$E$	E	4	1	$\mathbb{Q}_{10,1}^{(h,E,4)}$	Qh(10, E, 4, 1)	$S_{10}$
116	$E$	E	5	0	$\mathbb{Q}_{10,0}^{(h,E,5)}$	Qh(10, E, 5, 0)	$C_8$
117	$E$	E	5	1	$\mathbb{Q}_{10,1}^{(h,E,5)}$	Qh(10, E, 5, 1)	$-S_8$
118	$E$	E	6	0	$\mathbb{Q}_{10,0}^{(h,E,6)}$	Qh(10, E, 6, 0)	$C_4$
119	$E$	E	6	1	$\mathbb{Q}_{10,1}^{(h,E,6)}$	Qh(10, E, 6, 1)	$S_4$
120	$E$	E	7	0	$\mathbb{Q}_{10,0}^{(h,E,7)}$	Qh(10, E, 7, 0)	$C_2$
121	$E$	E	7	1	$\mathbb{Q}_{10,1}^{(h,E,7)}$	Qh(10, E, 7, 1)	$-S_2$

表 12 rank 11

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
122	$A_1$	A1	1	—	$\mathbb{Q}_{11}^{(h,A_1,1)}$	$\text{Qh}(11, \text{A1}, 1, )$	$S_6$
123	$A_1$	A1	2	—	$\mathbb{Q}_{11}^{(h,A_1,2)}$	$\text{Qh}(11, \text{A1}, 2, )$	$C_9$
124	$A_1$	A1	3	—	$\mathbb{Q}_{11}^{(h,A_1,3)}$	$\text{Qh}(11, \text{A1}, 3, )$	$C_3$
125	$A_2$	A2	1	—	$\mathbb{Q}_{11}^{(h,A_2,1)}$	$\text{Qh}(11, \text{A2}, 1, )$	$C_0$
126	$A_2$	A2	2	—	$\mathbb{Q}_{11}^{(h,A_2,2)}$	$\text{Qh}(11, \text{A2}, 2, )$	$C_6$
127	$A_2$	A2	3	—	$\mathbb{Q}_{11}^{(h,A_2,3)}$	$\text{Qh}(11, \text{A2}, 3, )$	$S_9$
128	$A_2$	A2	4	—	$\mathbb{Q}_{11}^{(h,A_2,4)}$	$\text{Qh}(11, \text{A2}, 4, )$	$S_3$
129	$E$	E	1	0	$\mathbb{Q}_{11,0}^{(h,E,1)}$	$\text{Qh}(11, \text{E}, 1, 0)$	$C_{11}$
130	$E$	E	1	1	$\mathbb{Q}_{11,1}^{(h,E,1)}$	$\text{Qh}(11, \text{E}, 1, 1)$	$-S_{11}$
131	$E$	E	2	0	$\mathbb{Q}_{11,0}^{(h,E,2)}$	$\text{Qh}(11, \text{E}, 2, 0)$	$C_7$
132	$E$	E	2	1	$\mathbb{Q}_{11,1}^{(h,E,2)}$	$\text{Qh}(11, \text{E}, 2, 1)$	$S_7$
133	$E$	E	3	0	$\mathbb{Q}_{11,0}^{(h,E,3)}$	$\text{Qh}(11, \text{E}, 3, 0)$	$C_5$
134	$E$	E	3	1	$\mathbb{Q}_{11,1}^{(h,E,3)}$	$\text{Qh}(11, \text{E}, 3, 1)$	$-S_5$
135	$E$	E	4	0	$\mathbb{Q}_{11,0}^{(h,E,4)}$	$\text{Qh}(11, \text{E}, 4, 0)$	$C_1$
136	$E$	E	4	1	$\mathbb{Q}_{11,1}^{(h,E,4)}$	$\text{Qh}(11, \text{E}, 4, 1)$	$S_1$
137	$E$	E	5	0	$\mathbb{Q}_{11,0}^{(h,E,5)}$	$\text{Qh}(11, \text{E}, 5, 0)$	$S_{10}$
138	$E$	E	5	1	$\mathbb{Q}_{11,1}^{(h,E,5)}$	$\text{Qh}(11, \text{E}, 5, 1)$	$-C_{10}$
139	$E$	E	6	0	$\mathbb{Q}_{11,0}^{(h,E,6)}$	$\text{Qh}(11, \text{E}, 6, 0)$	$-S_8$
140	$E$	E	6	1	$\mathbb{Q}_{11,1}^{(h,E,6)}$	$\text{Qh}(11, \text{E}, 6, 1)$	$-C_8$
141	$E$	E	7	0	$\mathbb{Q}_{11,0}^{(h,E,7)}$	$\text{Qh}(11, \text{E}, 7, 0)$	$S_4$
142	$E$	E	7	1	$\mathbb{Q}_{11,1}^{(h,E,7)}$	$\text{Qh}(11, \text{E}, 7, 1)$	$-C_4$
143	$E$	E	8	0	$\mathbb{Q}_{11,0}^{(h,E,8)}$	$\text{Qh}(11, \text{E}, 8, 0)$	$-S_2$
144	$E$	E	8	1	$\mathbb{Q}_{11,1}^{(h,E,8)}$	$\text{Qh}(11, \text{E}, 8, 1)$	$-C_2$