Weekly Meeting

Topic: Searching $s \times s \times s$ and $s^2 \times s^2$ for $\mathrm{SOA}(2+)$

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This week

Completed:

- Greedy Algorithm
- 16 runs (Both $2 \times 2 \times 2$ and $2^2 \times 2^2$)
- 32 runs ($2 \times 2 \times 2$)

TODO:

- Put results over Overleaf

16 runs, case I

Maximizing $2 \times 2 \times 2$, then 4×4.

	idx	num_of_columns	columns	wlp	is_comp	b_columns	s22_max
1	1	4	1 2 4 8	0 0	FALSE	14 5 9 3	6
3	3	4	1 2 4 7	0 1	FALSE	10 12 9 8	6
11	4	5	1 2 4 8 15	0 0 1	FALSE	6 9 10 5 3	10
2	5	5	1 2 4 8 7	0 1 0	FALSE	12 13 10 3 9	8
12	8	6	1 2 4 8 7 11	0 3 0 0	FALSE	12 13 10 5 9 5	8
13	13	7	1 2 4 8 7 11 13	0 7 0 0 0	FALSE	*NA*	0
14	15	8	6 7 9 11 12 13 14 15	3 2 1 1 0	TRUE	2 2 1 1 4 5 4 5	14
15	10	9	5 6 7 9 10 11 13 14 15	2 0 0 1	TRUE	1 2 3 1 2 3 1 2 3	18
16	4	10	3 5 6 7 9 10 11 12 13 14	0 0 1	TRUE	1 1 2 8 1 2 4 4 2 1	15

16 runs, case II

Maximizing 4×4, then $2 \times 2 \times 2$.

	idx	num_of_columns	a_columns	wlp	is_comp	b_columns	s22_max
1	1	4	1 2 4 8	0 0	FALSE	14 5 9 3	6
3	3	4	1 2 4 7	0 1	FALSE	10 12 9 8	6
11	4	5	1 2 4 8 15	0 0 1	FALSE	6 9 10 5 3	10
2	5	5	1 2 4 8 7	0 1 0	FALSE	12 13 10 3 9	8
12	8	6	1 2 4 8 7 11	0 3 0 0	FALSE	12 13 10 5 9 5	8
13	13	7	1 2 4 8 7 11 13	0 7 0 0 0	FALSE	*NA*	0
14	15	8	6 7 9 11 12 13 14 15	3 2 1 1 0	TRUE	2 2 1 1 4 5 4 5	14
15	10	9	5 6 7 9 10 11 13 14 15	2 0 0 1	TRUE	1 2 3 1 2 3 1 2 3	18
16	4	10	3 5 6 7 9 10 11 12 13 14	0 0 1	TRUE	1 1 2 8 1 2 4 4 2 1	15

32 runs

Exhaustive search for $2 \times 2 \times 2$ is instant.

idx	num_of_columns	columns	wlp	is_comp
1	7	1 2 4 8 16 15 19	0 1 2 0 0	FALSE
2	7	1 2 4 8 16 31 7	0 2 0 1 0	FALSE
3	7	1 2 4 8 16 7 11	0 3 0 0 0	FALSE
4	7	1 2 4 8 7 11 13	0 7 0 0 0	FALSE
15	8	1 2 4 8 16 15 19 21	0 3 4 0 0 0	FALSE
16	8	1 2 4 8 16 31 7 11	0 5 0 2 0 0	FALSE
17	8	1 2 4 8 16 7 11 19	0 6 0 0 0 1	FALSE
18	8	1 2 4 8 16 7 11 13	0 7 0 0 0 0	FALSE
19	8	8 9 10 11 12 13 14 15	0 14 0 0 0 1	FALSE
36	9	1 2 4 8 16 15 19 21 25	0 6 8 0 0 1 0	FALSE
37	9	1 2 4 8 16 15 19 21 22	0 7 7 0 0 0 1	FALSE
38	9	1 2 4 8 16 31 7 11 21	0 9 0 6 0 0 0	FALSE
39	9	1 2 4 8 16 31 7 11 13	0 10 0 4 0 1 0	FALSE
40	9	1 2 4 8 16 7 11 13 14	0 14 0 0 0 1 0	FALSE
70	10	1 2 4 8 16 15 19 21 25 30	0 10 16 0 0 5 0 0	FALSE
71	10	1 2 4 8 16 31 7 11 21 25	0 15 0 15 0 0 0 1	FALSE
72	10	1 2 4 8 16 31 7 11 21 13	0 16 0 12 0 3 0 0	FALSE
73	10	1 2 4 8 16 31 7 11 13 14	0 18 0 8 0 5 0 0	FALSE

32 runs

120	11	1 2 4 8 16 31 7 11 21 25 13	0 25 0 27 0 10 0 1 0	FALSE
121	11	1 2 4 8 16 31 7 11 21 13 14	0 26 0 24 0 13 0 0 0	FALSE
187	12	1 2 4 8 16 31 7 11 21 25 13 14	0 38 0 52 0 33 0 4 0 0	FALSE
188	12	1 2 4 8 16 31 7 11 21 13 14 26	0 39 0 48 0 39 0 0 0 1	FALSE
278	13	1 2 4 8 16 31 7 11 21 25 13 14 19	0 55 0 96 0 87 0 16 0 1 0	FALSE
391	14	1 2 4 8 16 31 7 11 21 25 13 14 19 22	0 77 0 168 0 203 0 56 0 7 0 0	FALSE
520	15	1 2 4 8 16 31 7 11 21 25 13 14 19 22 26	0 105 0 280 0 435 0 168 0 35 0 0 0	FALSE
661	16	10 12 17 18 19 20 21 22 23 24 25 26 27 28 29 30	23 60 89 141 198 193 146 98 51 18 5 1 0	TRUE
516	17	9 10 11 12 13 14 18 20 22 24 25 26 27 28 29 30 31	18 42 57 84 104 89 62 36 14 4 1 0	TRUE
515	17	9 10 12 17 18 19 20 21 22 23 24 25 26 27 28 29 30	18 42 56 85 108 85 56 42 18 0 0 1	TRUE
386	18	9 10 11 12 13 14 17 18 20 23 24 25 26 27 28 29 30...	14 29 34 46 54 41 22 10 4 1 0	TRUE
384	18	9 10 11 12 13 14 18 20 22 23 24 25 26 27 28 29 30...	14 28 35 50 50 35 28 14 0 0 1	TRUE
383	18	6 9 10 11 12 13 14 20 22 23 24 25 26 27 28 29 30 31	14 28 34 50 54 35 22 14 4 0 0	TRUE
382	18	9 10 12 13 14 15 17 18 20 21 22 23 25 26 28 29 30...	14 23 24 56 76 39 8 8 6 1 0	TRUE
269	19	5 6 9 10 11 12 13 14 20 22 23 24 25 26 27 28 29 3...	11 18 18 28 28 13 6 4 1 0	TRUE
268	19	9 10 12 13 14 15 17 18 20 21 22 23 25 26 27 28 29...	11 16 14 30 36 15 2 2 1 0	TRUE
178	20	5 6 9 10 11 12 13 14 20 21 22 23 24 25 26 27 28 2...	9 11 7 15 15 4 1 1 0	TRUE
114	21	9 10 11 12 13 14 15 17 18 19 20 21 22 23 25 26 27...	8 7 0 7 8 0 0 1	TRUE
55	22	3 5 6 7 9 10 11 12 13 14 20 21 22 23 24 25 26 27 2...	4 3 3 4 0 0 1	TRUE