Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
theta4 | 1949 | 200;	0| 0|304	4.98689141 1 | 4.98690560 1	3.3-12| 9.6-7| 1.0-7| 5.8-8| 1.1-7| 1.1-8| -1.4-6	06
theta42 | 5986 | 200;	0| 0|179	2.37382082 1 | 2.37382041 1	3.7-14| 9.6-7| 7.8-8| 3.5-8| 3.4-9| 1.6-9| 8.3-8	03
theta6 | 4375 | 300;	0| 0|316	6.29616118 1 | 6.29618686 1	5.9-12| 8.5-7| 1.0-10| 9.6-9| 1.6-7| 2.4-8| -2.0-6	13
theta62 | 13390 | 300;	0| 0|178	2.93779365 1 | 2.93779433 1	1.5-13| 9.5-7| 2.8-8| 1.2-8| 5.1-9| 2.2-9| -1.1-7	08
theta8 | 7905 | 400;	0| 0|316	7.34075146 1 | 7.34078891 1	9.4-14| 9.7-7| 1.6-10| 1.2-8| 1.7-7| 2.1-8| -2.5-6	24
theta82 | 23872 | 400;	0| 0|157	3.40643277 1 | 3.40643435 1	6.5-14| 9.7-7| 2.1-8| 9.8-9| 1.6-8| 4.0-9| -2.3-7	13
theta83 | 39862 | 400;	0| 0|154	2.01671025 1 | 2.01671066 1	4.7-14| 9.5-7| 2.8-8| 8.7-9| 3.3-9| 5.1-10| -1.0-7	14
theta10 | 12470 | 500;	0| 0|354	8.31485880 1 | 8.31490052 1	4.1-14| 8.5-7| 2.2-10| 6.5-9| 1.7-7| 2.5-8| -2.5-6	46
theta102 | 37467 | 500;	0| 0|157	3.80662264 1 | 3.80662724 1	1.1-13| 9.5-7| 8.5-9| 7.0-9| 1.7-8| 9.6-10| -6.0-7	23
theta103 | 62516 | 500;	0| 0|144	2.23774188 1 | 2.23774202 1	1.4-14| 9.2-7| 3.9-8| 1.2-8| 9.5-10| 2.1-10| -3.0-8	22
theta104 | 87245 | 500;	0| 0|169	1.32826073 1 | 1.32826099 1	1.7-14| 9.3-7| 1.5-8| 2.6-9| 2.1-9| 6.9-10| -9.2-8	24
theta12 | 17979 | 600;	0| 0|362	9.20905068 1 | 9.20909180 1	8.7-13| 9.0-7| 0 | 6.1-9| 1.2-7| 1.4-8| -2.2-6	1:15
theta123 | 90020 | 600;	0| 0|156	2.44951466 1 | 2.44951496 1	6.6-14| 9.3-7| 1.3-8| 4.1-9| 1.4-9| 3.8-10| -6.0-8	34
san200-0.7-1 | 5971 | 200;	4| 4|500	3.00000000 1 | 3.00000000 1	4.4-12| 3.5-10| 1.8-12| 0.3-16| 4.0-13| 0.0-16| -2.7-10	07
sanr200-0.7 | 6033 | 200;	0| 0|187	2.36332846 1 | 2.36332912 1	4.7-14| 9.4-7| 4.2-8| 1.7-8| 3.2-9| 4.0-9| -1.4-7	03
c-fat200-1 | 18367 | 200;	0| 0|233	1.19999965 1 | 1.20000137 1	5.0-14| 9.8-7| 7.8-8| 8.9-8| 2.0-8| 4.7-8| -6.9-7	03
hamming-8-4 | 11777 | 256;	0| 0|124	1.59998392 1 | 1.60000146 1	4.4-14| 4.7-7| 0 | 1.3-7| 2.8-7| 9.6-8| -5.3-6	02
hamming-9-8 | 2305 | 512;	11| 11|500	2.24000000 2 | 2.24000020 2	1.1-10| 9.5-7| 1.7-10| 0.0-16| 1.4-11| 0.0-16| -4.4-8	44
hamming-10-2 | 23041 | 1024;	0| 0|657	8.53345652 1 | 8.53332571 1	6.9-12| 8.7-7| 2.1-7| 3.2-8| 2.3-7| 3.5-8| 7.6-6	3:09
hamming-7-5-6 | 1793 | 128;	0| 0|510	3.59994044 1 | 3.60000147 1	2.8-13| 3.6-7| 0 | 0.5-16| 8.7-7| 6.7-7| -8.4-6	04
hamming-8-3-4 | 16129 | 256;	0| 0|232	2.56000182 1 | 2.56000079 1	2.9-14| 7.8-7| 1.3-7| 0 | 4.0-8| 0.0-16| 2.0-7	06
hamming-9-5-6 | 53761 | 512;	0| 0|461	5.86651695 1 | 5.86665968 1	3.3-13| 7.5-7| 0 | 0 | 9.5-7| 2.6-7| -1.2-5	45
brock200-1 | 5067 | 200;	0| 0|182	2.71967143 1 | 2.71967180 1	4.3-14| 9.6-7| 5.1-8| 2.6-8| 3.2-9| 4.6-10| -6.6-8	04
brock200-4 | 6812 | 200;	0| 0|172	2.11210717 1 | 2.11210766 1	1.0-14| 9.2-7| 5.9-8| 2.3-8| 4.8-9| 1.0-9| -1.1-7	04
brock400-1 | 20078 | 400;	0| 0|171	3.93308191 1 | 3.93309468 1	1.5-13| 8.9-7| 8.5-10| 8.0-9| 9.0-8| 1.2-8| -1.6-6	14
keller4 | 5101 | 171;	0| 0|317	1.34659036 1 | 1.34659045 1	2.7-14| 9.9-7| 8.0-8| 9.2-8| 2.1-8| 9.6-9| -3.2-8	03
p-hat300-1 | 33918 | 300;	0| 0|649	1.00202098 1 | 1.00202126 1	1.0-13| 9.9-7| 7.6-8| 1.9-8| 8.3-9| 5.5-11| -1.3-7	26
G43 | 9991 | 1000;	21| 21|973	2.79738220 2 | 2.79735897 2	5.3-12| 8.9-7| 1.7-7| 2.7-8| 2.1-7| 1.6-8| 4.1-6	12:32
G44 | 9991 | 1000;	21| 21|942	2.79743352 2 | 2.79746225 2	5.7-12| 9.9-7| 1.2-8| 1.5-8| 2.6-7| 5.0-8| -5.1-6	12:00
G45 | 9991 | 1000;	21| 21|888	2.79313957 2 | 2.79317590 2	3.6-12| 9.8-7| 6.0-8| 3.9-8| 3.3-7| 1.1-7| -6.5-6	11:43
G46 | 9991 | 1000;	21| 21|887	2.79026490 2 | 2.79032512 2	3.6-12| 9.7-7| 5.8-8| 4.8-8| 5.6-7| 1.4-7| -1.1-5	11:35
G47 | 9991 | 1000;	21| 21|1042	2.80888870 2 | 2.80891901 2	9.7-12| 9.4-7| 7.2-10| 1.5-8| 2.7-7| 2.4-8| -5.4-6	13:10
G51 | 5910 | 1000;	1| 2|5672	3.49000718 2 | 3.49000007 2	8.6-10| 9.9-7| 4.5-7| 4.9-7| 4.2-8| 1.8-8| 1.0-6	1:15:12
G52 | 5917 | 1000;	5| 5|10840	3.48386577 2 | 3.48386413 2	3.4-9| 9.9-7| 3.9-7| 2.3-7| 1.5-8| 2.3-8| 2.4-7	2:21:46
G53 | 5915 | 1000;	4| 4|13260	3.48213570 2 | 3.48211536 2	3.3-9| 9.9-7| 5.0-7| 3.0-7| 1.2-7| 4.9-8| 2.9-6	2:48:21
G54 | 5917 | 1000;	8| 8|4278	3.40999655 2 | 3.41000193 2	4.0-10| 9.9-7| 1.3-7| 1.3-7| 2.0-8| 9.3-9| -7.9-7	51:18
1dc.128 | 1472 | 128;	28| 31|1575	1.66783072 1 | 1.66783019 1	1.6-12| 8.7-7| 3.7-7| 9.9-7| 1.5-8| 5.2-8| 1.6-7	13
1et.128 | 673 | 128;	0| 0|313	2.92310544 1 | 2.92308952 1	7.3-14| 9.6-7| 2.2-7| 4.4-8| 2.8-7| 8.5-9| 2.7-6	02
1tc.128 | 513 | 128;	4| 4|700	3.79999993 1 | 3.79999772 1	8.9-9| 7.6-7| 2.2-10| 0.5-16| 3.7-11| 0.0-16| 2.9-7	04
1zc.128 | 1121 | 128;	0| 0|164	2.06664801 1 | 2.06666822 1	1.9-13| 9.4-7| 0 | 0.3-16| 4.9-7| 2.4-8| -4.8-6	01
1dc.256 | 3840 | 256;	2| 2|1000	2.99999420 1 | 3.00000796 1	9.7-7| 3.1-7| 7.1-16| 4.0-14| 3.3-15| 2.2-15| -2.3-6	25
1et.256 | 1665 | 256;	0| 0|893	5.44649927 1 | 5.44650229 1	2.1-13| 9.9-7| 4.5-8| 2.6-8| 6.7-9| 1.4-8| -2.7-7	23
1tc.256 | 1313 | 256;	0| 0|1335	6.32404424 1 | 6.32403890 1	2.2-14| 9.9-7| 2.5-7| 2.1-7| 4.4-8| 2.6-8| 4.2-7	38
1zc.256 | 2817 | 256;	0| 0|237	3.73329553 1 | 3.73333227 1	2.0-13| 6.1-7| 0 | 7.4-8| 3.8-7| 4.7-8| -4.9-6	05
1dc.512 | 9728 | 512;	0| 0|2216	5.26951714 1 | 5.26951282 1	1.2-12| 9.9-7| 1.8-7| 6.8-8| 1.7-8| 2.4-9| 4.1-7	5:05
1et.512 | 4033 | 512;	0| 0|990	1.03549245 2 | 1.03549269 2	2.5-12| 9.9-7| 4.0-8| 3.0-8| 9.3-9| 6.6-9| -1.1-7	1:57
1tc.512 | 3265 | 512;	0| 0|2494	1.12534091 2 | 1.12533878 2	5.4-12| 9.9-7| 3.2-7| 2.9-7| 4.7-8| 5.6-9| 9.4-7	4:57
2dc.512 | 54896 | 512;	0| 0|2956	1.13836346 1 | 1.13834332 1	9.3-13| 9.9-7| 3.7-7| 5.0-7| 1.1-7| 6.2-8| 8.5-6	5:34
1zc.512 | 6913 | 512;	0| 0|490	6.80006603 1 | 6.80000099 1	3.9-13| 8.5-7| 2.2-7| 4.0-8| 2.4-7| 3.6-8| 4.7-6	53
1dc.1024 | 24064 | 1024;	0| 0|2620	9.55514182 1 | 9.55511660 1	3.2-13| 9.9-7| 2.8-7| 6.4-8| 3.9-8| 4.0-9| 1.3-6	31:46
1et.1024 | 9601 | 1024;	0| 0|1144	1.82071997 2 | 1.82071515 2	3.1-12| 9.9-7| 2.5-7| 3.5-8| 4.5-8| 2.2-9| 1.3-6	12:43
1tc.1024 | 7937 | 1024;	0| 0|2732	2.04205928 2 | 2.04204076 2	7.4-13| 9.9-7| 6.3-7| 5.1-7| 1.5-7| 2.9-8| 4.5-6	31:34
1zc.1024 | 16641 | 1024;	0| 0|711	1.28001293 2 | 1.27999917 2	3.9-12| 7.7-7| 1.6-7| 2.0-8| 1.8-7| 1.7-8| 5.4-6	7:12
2dc.1024 | 169163 | 1024;	0| 0|4135	1.77104688 1 | 1.77099903 1	4.6-13| 6.5-7| 6.2-7| 9.9-7| 1.6-7| 1.7-7| 1.3-5	44:55
1dc.2048 | 58368 | 2048;	0| 0|4153	1.74258920 2 | 1.74257466 2	1.1-11| 9.9-7| 3.7-7| 2.9-7| 9.5-8| 1.2-8| 4.2-6	5:50:06
1et.2048 | 22529 | 2048;	0| 0|3039	3.38165943 2 | 3.38165218 2	1.2-11| 9.9-7| 1.8-7| 1.7-7| 2.7-8| 8.6-9| 1.1-6	4:01:54
1tc.2048 | 18945 | 2048;	0| 0|2876	3.70489820 2 | 3.70488730 2	1.4-11| 9.9-7| 2.8-7| 1.8-7| 3.9-8| 2.2-9| 1.5-6	3:50:43
2dc.2048 | 504452 | 2048;	0| 0|2997	2.87872690 1 | 2.87867849 1	1.9-12| 9.9-7| 2.9-7| 6.1-7| 7.3-8| 7.0-8| 8.3-6	3:54:58

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
fap08 | 120 | 120;	1| 1|368	2.43627555 0 | 2.43628529 0	3.2-14| 7.5-7| 7.5-9| 9.8-7| 2.3-8| 1.7-7| -1.7-6	03
fap09 | 174 | 174;	1| 1|426	1.07978262 1 | 1.07977997 1	2.0-14| 4.0-7| 5.5-9| 9.8-7| 1.9-8| 7.0-7| 1.2-6	05
fap10 | 183 | 183;	3| 3|993	9.70259108-3 | 9.72839625-3	4.0-15| 8.8-7| 1.7-7| 8.4-7| 3.6-8| 4.4-7| -2.5-5	18
fap11 | 252 | 252;	5| 5|1180	2.97984952-2 | 2.98707469-2	8.1-12| 9.6-7| 4.9-7| 4.5-15| 2.4-7| 6.5-15| -6.8-5	39
fap12 | 369 | 369;	15| 15|1768	2.73312482-1 | 2.73415267-1	9.4-14| 9.9-7| 2.6-8| 6.0-7| 7.0-9| 4.6-7| -6.6-5	1:56
fap25 | 2118 | 2118;	11| 11|2268	1.28781491 1 | 1.28803442 1	2.2-7| 9.1-7| 0.8-15| 4.5-7| 4.7-16| 9.2-7| -8.2-5	3:58:21
fap36 | 4110 | 4110;	4| 4|2033	6.98573185 1 | 6.98607976 1	8.4-10| 9.5-7| 8.5-7| 7.0-15| 2.3-8| 1.1-13| -2.5-5	23:07:56
bur26a | 1051 | 676;	137|222|10228	5.42644954 6 | 5.42664508 6	7.6-11| 9.9-7| 2.6-7| 7.9-7| 5.1-7| 2.5-9| -1.8-5	1:48:05
bur26b | 1051 | 676;	100|208|8605	3.81748294 6 | 3.81761983 6	5.3-11| 9.9-7| 3.8-7| 2.5-7| 8.2-7| 2.2-9| -1.8-5	1:32:52
bur26c | 1051 | 676;	247|441|21498	5.42685366 6 | 5.42707215 6	5.3-11| 9.9-7| 1.6-7| 7.5-7| 2.5-7| 2.0-9| -2.0-5	2:03:12
bur26d | 1051 | 676;	173|306|13287	3.82088460 6 | 3.82098028 6	1.5-10| 9.9-7| 9.4-8| 8.0-7| 2.8-7| 3.5-10| -1.3-5	1:59:20
bur26e | 1051 | 676;	129|361|14705	5.38699884 6 | 5.38711462 6	2.3-10| 8.8-7| 1.1-7| 9.4-7| 1.4-8| 2.5-8| -1.1-5	1:18:35
bur26f | 1051 | 676;	107|248|11272	3.78211965 6 | 3.78219580 6	2.1-15| 9.9-7| 4.1-7| 2.7-7| 3.8-11| 4.1-9| -1.0-5	1:45:13
bur26g | 1051 | 676;	250|392|10817	1.01172603 7 | 1.01177521 7	2.3-11| 9.9-7| 5.0-7| 5.6-7| 2.3-9| 4.2-9| -2.4-5	1:32:44
bur26h | 1051 | 676;	146|360|10658	7.09871739 6 | 7.09844876 6	1.5-10| 9.5-7| 7.4-7| 9.9-7| 2.4-9| 4.7-9| 1.9-5	1:25:45
chr12a | 232 | 144;	185|246|1150	9.55200000 3 | 9.55199999 3	4.4-7| 4.8-11| 3.1-7| 7.3-14| 3.3-8| 7.9-15| 5.7-10	25
chr12b | 232 | 144;	141|150|1333	9.74201174 3 | 9.74199999 3	9.3-7| 4.5-10| 6.5-7| 3.1-14| 5.0-8| 2.0-15| 6.0-7	19
chr12c | 232 | 144;	70|213|5547	1.11575925 4 | 1.11555865 4	1.4-11| 3.9-7| 8.4-9| 2.2-7| 9.8-8| 5.9-7| 9.0-5	1:10
chr15a | 358 | 225;	215|394|14122	9.89815971 3 | 9.89192452 3	1.5-10| 6.9-7| 6.5-9| 1.6-7| 6.2-8| 4.5-7| **3.2-4**	7:08
chr15b | 358 | 225;	34| 92|2611	7.99225745 3 | 7.99463251 3	8.9-12| 7.4-7| 2.9-9| 1.1-7| 6.8-8| 4.7-7| **-1.5-4**	58
chr15c | 358 | 225;	26| 67|2020	9.50400001 3 | 9.50389525 3	2.1-9| 4.2-7| 7.8-16| 1.7-16| 2.7-16| 0.0-16| 5.5-6	46
chr18a | 511 | 324;	356|519|13265	1.11038092 4 | 1.10932891 4	2.0-10| 4.9-7| 1.0-8| 1.7-7| 1.1-7| 7.9-7| **4.7-4**	12:50
chr18b | 511 | 324;	34| 61|1658	1.53398244 3 | 1.53401148 3	7.9-12| 9.8-7| 1.3-7| 9.9-7| 2.3-9| 2.5-7| -9.5-6	1:55
chr20a | 628 | 400;	241|445|10389	2.19239004 3 | 2.19072617 3	2.4-10| 8.7-7| 9.7-8| 2.1-7| 4.6-8| 4.0-7| **3.8-4**	18:17
chr20b | 628 | 400;	68|165|3940	2.29800000 3 | 2.29800941 3	7.1-10| 6.8-9| 5.2-10| 0.7-16| 4.4-11| 0.0-16| -2.0-6	9:02
chr20c | 628 | 400;	386|764|10040	1.41446523 4 | 1.41476127 4	9.6-8| 8.1-7| 5.4-8| 7.1-16| 9.7-10| 0.0-16| **-1.0-4**	13:12
chr22a | 757 | 484;	104|250|6940	6.15599997 3 | 6.15591877 3	7.8-9| 3.5-7| 2.6-10| 0.2-16| 3.5-11| 0.0-16| 6.6-6	22:57
chr22b | 757 | 484;	89|189|5620	6.19399919 3 | 6.19397816 3	2.0-7| 3.1-7| 1.6-7| 1.9-16| 6.3-10| 0.0-16| 1.7-6	12:46
chr25a | 973 | 625;	53|200|5151	3.79659302 3 | 3.79236524 3	2.5-11| 8.6-7| 6.5-8| 3.7-8| 4.2-8| 2.0-7| **5.6-4**	21:04
els19 | 568 | 361;	40|128|5188	1.72151242 7 | 1.72123317 7	1.3-13| 9.9-7| 8.7-8| 7.7-8| 4.1-9| 9.2-9| 8.1-5	7:01
esc16a | 406 | 256;	54| 83|1895	6.32769286 1 | 6.32822495 1	1.6-11| 9.9-7| 5.5-7| 7.3-7| 1.7-7| 7.2-7| -4.2-5	1:16
esc16b | 406 | 256;	69|382|5102	2.89956161 2 | 2.89979880 2	2.7-16| 8.4-7| 2.2-7| 7.4-7| 8.0-8| 9.9-7| -4.1-5	3:29
esc16c | 406 | 256;	289|1044|9190	1.53973627 2 | 1.53987010 2	4.4-11| 9.9-7| 2.2-7| 5.3-7| 2.6-8| 2.3-8| -4.3-5	9:46
esc16d | 406 | 256;	0| 0|298	1.29998576 1 | 1.30000078 1	5.9-13| 9.6-7| 2.9-8| 5.3-7| 7.2-9| 2.3-7| -5.6-6	08
esc16e | 406 | 256;	0| 0|342	2.63364763 1 | 2.63368158 1	4.9-13| 9.9-7| 1.6-7| 1.6-7| 2.0-7| 1.2-7| -6.3-6	08
esc16g | 406 | 256;	0| 0|447	2.47403234 1 | 2.47403141 1	5.8-13| 9.8-7| 2.6-8| 2.3-7| 2.1-9| 1.9-8| 1.8-7	11
esc16h | 406 | 256;	41| 57|1373	9.76183140 2 | 9.76209281 2	2.8-12| 9.8-7| 1.9-7| 9.6-7| 2.0-7| 4.4-7| -1.3-5	44
esc16i | 406 | 256;	17| 17|864	1.13750212 1 | 1.13749182 1	5.5-13| 6.5-7| 4.2-7| 9.9-7| 1.9-8| 1.6-7| 4.3-6	24
esc16j | 406 | 256;	0| 0|451	7.79368279 0 | 7.79425037 0	3.2-13| 9.6-7| 6.5-7| 3.5-7| 7.3-7| 2.1-7| -3.4-5	12
esc32a | 1582 | 1024;	46| 78|1664	1.03320457 2 | 1.03320681 2	3.3-13| 9.5-7| 9.9-7| 8.1-7| 6.6-9| 7.5-9| -1.1-6	32:32
esc32b | 1582 | 1024;	52|100|2196	1.31863123 2 | 1.31876533 2	7.2-12| 9.8-7| 3.7-7| 9.6-7| 6.7-8| 9.3-7| -5.1-5	45:50
esc32c | 1582 | 1024;	46|139|3562	6.15172917 2 | 6.15177999 2	3.0-7| 9.7-7| 8.6-13| 3.2-7| 3.3-13| 1.4-7| -4.1-6	1:06:19
esc32d | 1582 | 1024;	0| 0|678	1.90223554 2 | 1.90227139 2	3.5-12| 9.9-7| 2.2-7| 2.7-7| 3.1-7| 2.3-7| -9.4-6	9:40
esc32e | 1582 | 1024;	40| 47|1248	1.90001450 0 | 1.89997253 0	1.6-8| 9.9-7| 1.3-15| 1.4-8| 1.8-16| 6.4-9| 8.7-6	22:00
esc32f | 1582 | 1024;	40| 47|1248	1.90001450 0 | 1.89997253 0	1.6-8| 9.9-7| 1.3-15| 1.4-8| 1.8-16| 6.4-9| 8.7-6	21:31
esc32g | 1582 | 1024;	0| 0|520	5.83333959 0 | 5.83331567 0	2.5-13| 9.3-7| 9.7-9| 8.0-8| 2.1-10| 4.4-9| 1.9-6	7:17
esc32h | 1582 | 1024;	97|236|4959	4.24337455 2 | 4.24374966 2	2.1-11| 9.9-7| 3.1-7| 7.9-7| 6.7-8| 7.6-7| -4.4-5	1:42:34
had12 | 232 | 144;	21| 71|2037	1.65198255 3 | 1.65201286 3	2.6-12| 8.4-7| 2.5-7| 3.2-7| 2.1-7| 7.3-8| -9.2-6	30
had14 | 313 | 196;	38| 97|3878	2.72395484 3 | 2.72400204 3	1.3-11| 7.4-7| 1.4-7| 9.9-7| 2.7-7| 4.9-9| -8.7-6	1:44
had16 | 406 | 256;	66|168|4900	3.72000134 3 | 3.71999993 3	3.2-7| 4.2-7| 2.0-7| 5.6-16| 3.2-8| 0.1-16| 1.9-7	3:31
had18 | 511 | 324;	227|312|11708	5.35783779 3 | 5.35808141 3	8.5-11| 9.9-7| 5.4-8| 7.6-7| 2.0-7| 3.9-8| -2.3-5	16:16
had20 | 628 | 400;	93|197|7004	6.92185231 3 | 6.92209285 3	2.3-11| 9.9-7| 8.9-8| 7.2-7| 2.8-7| 9.4-9| -1.7-5	18:14
kra30a | 1393 | 900;	49| 72|3208	8.68155154 4 | 8.68268686 4	1.2-10| 7.5-7| 1.2-7| 9.9-7| 3.4-7| 1.9-7| -6.5-5	52:13
kra30b | 1393 | 900;	81|101|3080	8.78355000 4 | 8.78468655 4	7.1-11| 7.0-7| 1.4-7| 9.9-7| 3.7-7| 1.7-7| -6.5-5	55:48
kra32 | 1582 | 1024;	67| 83|2946	8.57529179 4 | 8.57648412 4	1.3-11| 8.4-7| 1.4-7| 9.9-7| 3.5-7| 9.3-7| -7.0-5	1:07:22
lipa20a | 628 | 400;	19| 30|1300	3.68299997 3 | 3.68301015 3	8.5-9| 1.0-7| 0.9-15| 0.6-16| 2.4-16| 0.0-16| -1.4-6	1:35
lipa20b | 628 | 400;	4| 14|700	2.70760000 4 | 2.70760105 4	9.1-10| 4.3-8| 6.2-16| 2.0-16| 0.0-16| 0.0-16| -1.9-7	1:13
lipa30a | 1393 | 900;	443|1216|1300	1.31780000 4 | 1.31780000 4	4.4-8| 1.0-7| 1.0-8| 1.9-16| 2.5-13| 0.0-16| -4.3-10	47:33
lipa30b | 1393 | 900;	4| 9|820	1.51426000 5 | 1.51426111 5	2.3-9| 8.2-9| 3.3-14| 4.7-16| 4.1-14| 0.1-16| -3.7-7	11:08

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
lipa40a | 2458 | 1600;	153|546|3732	3.15379935 4 | 3.15379159 4	5.5-7| 1.2-7| 7.7-8| 1.4-16| 5.6-10| 0.0-16| 1.2-6	3:01:05
lipa40b | 2458 | 1600;	5| 18|991	4.76581311 5 | 4.76581129 5	4.2-7| 1.5-7| 3.3-7| 5.2-16| 3.7-9| 0.0-16| 1.9-7	1:02:59
nug12 | 232 | 144;	38| 44|1788	5.67842214 2 | 5.67916428 2	8.8-7| 3.4-7| 2.2-14| 9.2-7| 9.4-15| 2.4-8| -6.5-5	29
nug14 | 313 | 196;	44| 99|3776	1.01001317 3 | 1.01007277 3	8.6-11| 9.9-7| 8.8-8| 9.9-7| 2.5-7| 1.3-7| -2.9-5	1:44
nug15 | 358 | 225;	36| 69|2588	1.14044341 3 | 1.14050457 3	4.6-11| 9.9-7| 8.1-8| 9.9-7| 1.9-7| 1.1-7| -2.7-5	1:33
nug16a | 406 | 256;	61|128|4637	1.59916969 3 | 1.59924515 3	3.6-11| 9.9-7| 3.8-8| 9.9-7| 1.1-7| 1.5-7| -2.4-5	3:57
nug16b | 406 | 256;	37| 50|2018	1.21799012 3 | 1.21812797 3	1.1-11| 8.3-7| 2.7-7| 9.9-7| 7.8-7| 1.5-7| -5.7-5	1:25
nug17 | 457 | 289;	46| 74|2936	1.70695251 3 | 1.70703814 3	6.3-11| 9.7-7| 8.3-8| 9.9-7| 1.6-7| 1.4-7| -2.5-5	2:59
nug18 | 511 | 324;	48| 69|2592	1.89335861 3 | 1.89345444 3	4.5-11| 8.4-7| 8.4-8| 9.9-7| 2.0-7| 1.2-7| -2.5-5	3:21
nug20 | 628 | 400;	37| 53|2120	2.50597610 3 | 2.50616865 3	3.7-11| 8.7-7| 2.0-7| 9.9-7| 5.6-7| 1.1-7| -3.8-5	4:02
nug21 | 691 | 441;	50| 88|3190	2.38177341 3 | 2.38186274 3	7.4-11| 8.6-7| 4.4-8| 9.9-7| 8.5-8| 1.2-7| -1.9-5	9:15
nug22 | 757 | 484;	92|119|3840	3.52813269 3 | 3.52842541 3	2.3-11| 9.3-7| 1.5-7| 9.9-7| 3.9-7| 1.7-7| -4.1-5	14:16
nug24 | 898 | 576;	43| 66|2359	3.40071083 3 | 3.40090464 3	1.0-10| 9.6-7| 1.1-7| 9.9-7| 2.6-7| 2.5-7| -2.8-5	14:12
nug25 | 973 | 625;	48| 76|2708	3.62566278 3 | 3.62577908 3	9.7-11| 7.9-7| 6.0-8| 9.9-7| 1.1-7| 7.2-8| -1.6-5	19:25
nug27 | 1132 | 729;	49| 86|3300	5.12924842 3 | 5.12946060 3	1.5-10| 9.0-7| 6.2-8| 9.9-7| 1.2-7| 3.2-7| -2.1-5	36:53
nug28 | 1216 | 784;	50| 77|3190	5.02532199 3 | 5.02552528 3	1.6-10| 8.7-7| 7.2-8| 9.9-7| 1.3-7| 4.4-7| -2.0-5	40:26
nug30 | 1393 | 900;	44| 68|2463	5.94890136 3 | 5.94920345 3	3.8-11| 9.9-7| 1.3-7| 9.6-7| 3.3-7| 1.1-7| -2.5-5	45:02
rou12 | 232 | 144;	117|152|4455	2.35528884 5 | 2.35523034 5	8.0-11| 8.8-7| 9.1-8| 1.9-7| 2.8-8| 9.1-8| 1.2-5	1:04
rou15 | 358 | 225;	58| 69|2342	3.50177782 5 | 3.50197901 5	2.0-11| 8.2-7| 1.3-7| 9.9-7| 2.7-7| 2.2-7| -2.9-5	1:26
rou20 | 628 | 400;	40| 41|1640	6.95061534 5 | 6.95121474 5	8.3-7| 5.8-7| 2.9-14| 8.3-7| 1.2-14| 3.6-10| -4.3-5	3:26
scr12 | 232 | 144;	18| 22|1000	3.14099924 4 | 3.14099989 4	1.7-13| 7.3-7| 3.9-7| 3.9-7| 4.0-9| 1.0-8| -1.0-7	09
scr15 | 358 | 225;	21| 35|1060	5.11400014 4 | 5.11401398 4	3.6-7| 2.1-7| 4.8-7| 0.7-16| 4.7-10| 0.0-16| -1.4-6	33
scr20 | 628 | 400;	47| 78|3398	1.06790642 5 | 1.06798582 5	3.7-11| 9.7-7| 5.9-8| 9.9-7| 5.6-8| 5.2-7| -3.7-5	7:08
ste36a | 1996 | 1296;	122|189|7344	9.25661751 3 | 9.25811948 3	4.3-11| 9.9-7| 1.6-7| 9.9-7| 3.9-7| 6.8-8| -8.1-5	6:29:21
ste36b | 1996 | 1296;	173|242|11851	1.56582438 4 | 1.56653460 4	1.5-10| 9.9-7| 1.8-7| 9.9-7| 5.4-7| 4.2-8| **-2.3-4**	9:45:58
ste36c | 1996 | 1296;	143|202|10008	8.13267040 6 | 8.13407147 6	4.6-11| 9.9-7| 1.8-7| 9.5-7| 4.8-7| 3.8-9| -8.6-5	8:06:50
tai12a | 232 | 144;	16| 29|1120	2.24416000 5 | 2.24415915 5	3.1-9| 3.0-8| 0.8-15| 0.3-16| 5.8-16| 0.0-16| 1.9-7	10
tai12b | 232 | 144;	112|215|2709	3.94723293 7 | 3.94695056 7	9.5-10| 7.3-7| 1.8-7| 6.6-7| 8.4-7| 6.8-7| 3.6-5	41
tai15a | 358 | 225;	47| 50|1871	3.77038609 5 | 3.77069943 5	1.4-11| 7.1-7| 3.4-7| 9.9-7| 8.4-7| 2.9-7| -4.2-5	1:04
tai15b | 358 | 225;	114|233|6762	5.18224460 7 | 5.18401454 7	2.4-11| 9.9-7| 1.2-7| 9.9-7| 3.3-9| 2.2-9| **-1.7-4**	3:01
tai17a | 457 | 289;	44| 46|1756	4.76452581 5 | 4.76489250 5	2.2-11| 5.1-7| 3.1-7| 9.9-7| 7.5-7| 3.6-7| -3.8-5	1:41
tai20a | 628 | 400;	45| 47|1748	6.71594792 5 | 6.71635456 5	2.3-11| 6.5-7| 2.6-7| 9.9-7| 5.5-7| 2.0-7| -3.0-5	3:36
tai20b | 628 | 400;	171|484|7416	1.22460942 8 | 1.22403315 8	2.5-10| 9.5-7| 1.4-7| 9.4-7| 6.9-8| 6.9-8| **2.4-4**	9:22
tai25a | 973 | 625;	33| 42|2630	1.11336476 6 | 1.11525360 6	8.5-12| 9.9-7| 5.1-8| 9.4-7| 3.0-9| 2.7-9| **-8.5-4**	14:52
tai25b | 973 | 625;	296|344|18325	3.37687430 8 | 3.37871783 8	1.7-10| 9.9-7| 1.7-7| 9.9-7| 9.4-7| 5.1-8| **-2.7-4**	1:18:04
tai30a | 1393 | 900;	39| 39|1614	1.70671520 6 | 1.70679434 6	2.8-11| 7.4-7| 3.4-7| 9.9-7| 6.5-7| 2.2-7| -2.3-5	29:11
tai30b | 1393 | 900;	236|342|16584	5.98852630 8 | 5.99068570 8	9.0-7| 9.9-7| 6.9-14| 8.5-7| 6.1-15| 2.3-9| **-1.8-4**	2:52:00
tai35a | 1888 | 1225;	38| 38|3467	2.21649346 6 | 2.21657164 6	4.8-11| 6.6-7| 2.9-7| 9.9-7| 5.1-7| 2.4-7| -1.8-5	1:56:18
tai35b | 1888 | 1225;	142|214|10915	2.69644456 8 | 2.69710521 8	2.6-10| 9.9-7| 1.7-7| 9.8-7| 7.7-7| 6.7-8| **-1.2-4**	8:01:01
tai40a | 2458 | 1600;	33| 33|3395	2.84310602 6 | 2.84321095 6	7.6-11| 3.5-7| 2.8-7| 9.9-7| 6.0-7| 2.0-7| -1.8-5	3:56:34
tai40b | 2458 | 1600;	101|146|7124	6.09005347 8 | 6.09143489 8	5.6-10| 9.9-7| 2.5-7| 9.9-7| 9.9-7| 2.4-8| **-1.1-4**	10:55:44
tho30 | 1393 | 900;	44| 74|2925	1.43549788 5 | 1.43563445 5	6.3-11| 9.9-7| 1.8-7| 9.9-7| 5.1-7| 6.9-8| -4.8-5	1:03:01
tho40 | 2458 | 1600;	24| 51|3998	2.26485088 5 | 2.26503953 5	2.0-10| 9.9-7| 2.0-7| 9.9-7| 5.2-7| 2.7-8| -4.2-5	5:08:15
be100.1 | 101 | 101;	14| 14|1551	-2.00213242 4 |-2.00212896 4	1.7-7| 9.5-7| 3.9-7| 0.4-16| 1.4-7| 1.4-16| -8.6-7	07
be100.2 | 101 | 101;	0| 0|1666	-1.79887190 4 |-1.79887523 4	5.8-12| 5.6-7| 3.3-8| 1.5-7| 9.6-7| 2.7-7| 9.3-7	07
be100.3 | 101 | 101;	17| 17|1800	-1.82310505 4 |-1.82310492 4	9.2-8| 9.6-7| 3.1-7| 0.1-16| 8.0-8| 0.8-16| -3.6-8	08
be100.4 | 101 | 101;	53| 53|1308	-1.98417957 4 |-1.98417700 4	6.6-8| 9.7-7| 2.1-7| 0.1-16| 2.2-8| 2.0-16| -6.5-7	07
be100.5 | 101 | 101;	35| 35|1226	-1.68887012 4 |-1.68886853 4	1.7-8| 9.9-7| 9.0-8| 0.0-16| 2.2-8| 0.1-16| -4.7-7	07
be100.6 | 101 | 101;	41| 41|1580	-1.81482194 4 |-1.81481977 4	4.0-12| 9.9-7| 3.0-8| 2.8-8| 9.1-8| 1.4-7| -6.0-7	08
be100.7 | 101 | 101;	36| 36|1267	-1.97008496 4 |-1.97008398 4	1.0-7| 9.9-7| 4.4-7| 0.2-16| 1.4-7| 1.0-16| -2.5-7	06
be100.8 | 101 | 101;	18| 18|1347	-1.99463487 4 |-1.99463513 4	9.8-7| 5.3-7| 1.0-15| 2.0-8| 4.3-14| 1.1-7| 6.5-8	06
be100.9 | 101 | 101;	15| 16|1194	-1.42633657 4 |-1.42633763 4	2.2-7| 9.6-7| 7.7-7| 0.5-16| 1.9-7| 4.3-16| 3.7-7	06
be100.10 | 101 | 101;	21| 21|994	-1.64085243 4 |-1.64085076 4	5.2-12| 8.7-7| 7.1-8| 1.1-7| 9.7-7| 5.4-7| -5.1-7	05
be120.3.1 | 121 | 121;	95| 99|1550	-1.38035586 4 |-1.38035760 4	3.6-8| 9.8-7| 1.4-7| 0.1-16| 5.1-8| 0.4-16| 6.3-7	13
be120.3.2 | 121 | 121;	84| 87|1791	-1.36266293 4 |-1.36266545 4	2.4-8| 9.9-7| 4.3-8| 0.1-16| 2.5-8| 0.8-16| 9.2-7	14
be120.3.3 | 121 | 121;	56| 60|1482	-1.29879012 4 |-1.29879263 4	3.0-12| 9.9-7| 3.6-8| 4.7-8| 4.4-7| 7.3-8| 9.6-7	10
be120.3.4 | 121 | 121;	16| 16|1753	-1.45112484 4 |-1.45112258 4	1.0-11| 9.9-7| 2.9-8| 2.5-8| 3.4-7| 1.8-7| -7.8-7	10
be120.3.5 | 121 | 121;	101|102|1396	-1.19919090 4 |-1.19919206 4	3.4-8| 9.4-7| 2.2-7| 0.0-16| 4.2-8| 0.2-16| 4.8-7	12
be120.3.6 | 121 | 121;	73| 76|1486	-1.34320616 4 |-1.34320589 4	1.5-7| 9.9-7| 7.7-7| 0.1-16| 2.4-9| 1.3-16| -1.0-7	12

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
be120.3.7 | 121 | 121;	164|175|2473	-1.45641132 4 |-1.45641196 4	3.9-8| 9.8-7| 1.6-7| 0.0-16| 9.9-8| 0.6-16| 2.2-7	20
be120.3.8 | 121 | 121;	166|175|2295	-1.53030214 4 |-1.53030321 4	1.8-12| 9.9-7| 1.4-8| 3.5-8| 1.3-7| 2.6-7| 3.5-7	18
be120.3.9 | 121 | 121;	136|136|1279	-1.12413207 4 |-1.12413165 4	7.0-8| 9.4-7| 5.3-7| 0.0-16| 1.9-7| 1.0-16| -1.9-7	13
be120.3.10 | 121 | 121;	38| 38|1376	-1.29308724 4 |-1.29308274 4	9.9-7| 9.4-7| 6.8-16| 5.5-8| 2.7-13| 2.4-7| -1.7-6	09
be120.8.1 | 121 | 121;	47| 49|1386	-2.01939343 4 |-2.01939614 4	9.9-7| 9.2-7| 6.2-16| 3.7-8| 7.7-15| 2.2-7| 6.7-7	08
be120.8.2 | 121 | 121;	117|117|1764	-2.00741308 4 |-2.00741639 4	2.4-8| 9.9-7| 2.0-7| 0.1-16| 5.0-8| 0.1-16| 8.3-7	14
be120.8.3 | 121 | 121;	53| 53|1259	-2.05059039 4 |-2.05058872 4	1.4-7| 9.9-7| 5.8-7| 0.3-16| 1.2-7| 0.2-16| -4.1-7	09
be120.8.4 | 121 | 121;	61| 63|1623	-2.17797975 4 |-2.17798337 4	6.2-8| 9.8-7| 1.7-7| 0.1-16| 7.9-9| 0.3-16| 8.3-7	11
be120.8.5 | 121 | 121;	23| 23|1855	-2.13162780 4 |-2.13162746 4	1.8-12| 9.8-7| 2.7-8| 1.8-7| 1.7-7| 6.3-7| -7.9-8	11
be120.8.6 | 121 | 121;	65| 66|1389	-1.96769536 4 |-1.96770039 4	1.6-7| 9.7-7| 4.6-7| 0.2-16| 4.0-8| 1.8-16| 1.3-6	11
be120.8.7 | 121 | 121;	34| 36|1245	-2.37324046 4 |-2.37323567 4	6.2-12| 9.9-7| 2.3-8| 3.6-8| 7.1-7| 2.3-7| -1.0-6	09
be120.8.8 | 121 | 121;	30| 30|1120	-2.12047703 4 |-2.12047557 4	3.6-12| 9.7-7| 7.1-8| 7.2-8| 6.1-7| 9.2-7| -3.5-7	08
be120.8.9 | 121 | 121;	44| 46|1290	-1.92844228 4 |-1.92844391 4	2.9-12| 9.9-7| 3.6-8| 6.0-8| 1.9-7| 4.4-8| 4.2-7	09
be120.8.10 | 121 | 121;	114|114|1458	-2.00240045 4 |-2.00239955 4	1.3-8| 9.9-7| 6.1-8| 0.0-16| 1.2-9| 0.2-16| -2.2-7	13
be150.3.1 | 151 | 151;	64| 71|1660	-1.98491675 4 |-1.98492153 4	3.4-12| 9.9-7| 1.9-8| 3.6-8| 3.3-7| 2.9-7| 1.2-6	17
be150.3.2 | 151 | 151;	74| 83|1878	-1.88648463 4 |-1.88648565 4	4.7-12| 9.9-7| 5.7-9| 1.9-8| 1.8-7| 5.2-8| 2.7-7	20
be150.3.3 | 151 | 151;	58| 64|1562	-1.80437093 4 |-1.80437406 4	4.0-12| 9.9-7| 9.6-9| 6.7-8| 2.2-7| 4.5-7| 8.7-7	17
be150.3.4 | 151 | 151;	48| 49|1632	-2.06526731 4 |-2.06526537 4	4.8-12| 9.9-7| 3.7-8| 4.3-8| 4.2-7| 2.6-8| -4.7-7	17
be150.3.5 | 151 | 151;	66| 76|1696	-1.77686482 4 |-1.77686303 4	1.2-12| 9.9-7| 3.8-8| 2.5-7| 1.5-8| 6.0-7| -5.0-7	18
be150.3.6 | 151 | 151;	64| 70|1663	-1.80506749 4 |-1.80506987 4	5.2-12| 9.6-7| 2.5-8| 9.4-8| 9.9-7| 2.7-7| 6.6-7	17
be150.3.7 | 151 | 151;	63| 66|1691	-1.91012874 4 |-1.91013256 4	7.6-12| 9.4-7| 4.8-8| 5.6-8| 9.8-7| 7.9-8| 9.9-7	18
be150.3.8 | 151 | 151;	106|110|1943	-1.96980589 4 |-1.96980765 4	8.0-8| 9.9-7| 1.6-7| 0.1-16| 1.6-8| 0.1-16| 4.5-7	21
be150.3.9 | 151 | 151;	33| 33|1260	-1.41033725 4 |-1.41033515 4	3.2-7| 9.8-7| 6.5-7| 0.8-16| 1.6-7| 3.8-16| -7.4-7	12
be150.3.10 | 151 | 151;	146|150|2266	-1.92309196 4 |-1.92309315 4	1.7-8| 9.9-7| 5.9-8| 0.0-16| 9.7-9| 0.0-16| 3.1-7	25
be150.8.1 | 151 | 151;	53| 58|1456	-2.91436841 4 |-2.91437136 4	3.5-12| 9.2-7| 5.2-8| 6.9-8| 1.0-7| 7.4-7| 5.1-7	15
be150.8.2 | 151 | 151;	64| 69|1590	-2.88211031 4 |-2.88211307 4	3.0-7| 9.9-7| 8.6-7| 0.6-16| 9.3-8| 3.1-16| 4.8-7	17
be150.8.3 | 151 | 151;	66| 72|1719	-3.10603247 4 |-3.10603343 4	9.9-7| 6.8-7| 0.8-15| 3.3-8| 3.4-13| 1.3-7| 1.6-7	18
be150.8.4 | 151 | 151;	67| 70|1568	-2.87292945 4 |-2.87293303 4	4.1-8| 9.7-7| 3.4-7| 0.1-16| 6.4-9| 0.4-16| 6.2-7	17
be150.8.5 | 151 | 151;	71| 79|1743	-2.94820722 4 |-2.94820763 4	3.3-8| 9.9-7| 8.5-8| 0.1-16| 1.6-8| 0.1-16| 6.9-8	19
be150.8.6 | 151 | 151;	64| 65|1480	-3.14372375 4 |-3.14372641 4	6.1-8| 9.4-7| 1.9-7| 0.1-16| 2.2-8| 0.8-16| 4.2-7	15
be150.8.7 | 151 | 151;	80| 84|1738	-3.32521054 4 |-3.32521757 4	6.8-8| 9.9-7| 3.0-7| 0.1-16| 5.7-8| 0.8-16| 1.1-6	19
be150.8.8 | 151 | 151;	127|134|1946	-3.15999871 4 |-3.16000387 4	1.2-7| 9.9-7| 4.1-7| 0.2-16| 5.8-9| 1.8-16| 8.2-7	23
be150.8.9 | 151 | 151;	112|121|1890	-2.71107196 4 |-2.71107715 4	9.8-8| 9.9-7| 4.0-7| 0.2-16| 8.8-8| 4.4-16| 9.6-7	23
be150.8.10 | 151 | 151;	65| 71|1714	-3.00479452 4 |-3.00480014 4	4.2-12| 9.9-7| 1.7-8| 1.8-7| 9.3-7| 8.2-8| 9.4-7	17
be200.3.1 | 201 | 201;	76| 86|1784	-2.77160638 4 |-2.77161211 4	7.6-12| 9.9-7| 3.9-9| 2.5-8| 4.4-7| 1.1-7| 1.0-6	31
be200.3.2 | 201 | 201;	95|109|1962	-2.67607791 4 |-2.67607958 4	5.7-12| 9.6-7| 4.6-8| 5.8-8| 1.4-7| 7.1-7| 3.1-7	36
be200.3.3 | 201 | 201;	172|181|2565	-2.94786387 4 |-2.94786828 4	1.9-8| 9.9-7| 7.3-8| 0.0-16| 4.4-8| 0.1-16| 7.5-7	49
be200.3.4 | 201 | 201;	101|112|2097	-2.91061996 4 |-2.91062417 4	2.7-12| 9.9-7| 1.5-8| 3.2-8| 1.8-7| 5.1-8| 7.2-7	38
be200.3.5 | 201 | 201;	165|178|2394	-2.80729836 4 |-2.80730179 4	2.2-12| 9.9-7| 1.6-8| 5.3-8| 9.4-8| 4.8-7| 6.1-7	46
be200.3.6 | 201 | 201;	83| 92|1852	-2.79283274 4 |-2.79283530 4	4.5-12| 9.0-7| 2.9-8| 4.2-8| 4.3-7| 1.4-7| 4.6-7	33
be200.3.7 | 201 | 201;	79| 83|2050	-3.16204947 4 |-3.16204613 4	2.6-8| 9.7-7| 7.6-7| 0.5-16| 5.5-8| 1.1-15| -5.3-7	36
be200.3.8 | 201 | 201;	92|102|2068	-2.92442698 4 |-2.92443256 4	4.4-12| 9.8-7| 1.4-8| 4.5-8| 4.3-7| 3.0-7| 9.5-7	37
be200.3.9 | 201 | 201;	201|212|3478	-2.64370469 4 |-2.64370964 4	8.5-13| 9.9-7| 1.5-8| 1.5-8| 4.3-9| 1.9-8| 9.4-7	1:02
be200.3.10 | 201 | 201;	91| 97|1862	-2.57606847 4 |-2.57606978 4	2.9-12| 9.9-7| 9.2-9| 1.1-7| 1.7-7| 5.8-7| 2.5-7	34
be200.8.1 | 201 | 201;	96| 96|2493	-5.08694921 4 |-5.08694305 4	4.1-12| 9.9-7| 7.0-9| 1.7-8| 1.7-8| 1.0-7| -6.1-7	43
be200.8.2 | 201 | 201;	73| 81|1721	-4.43360234 4 |-4.43360625 4	4.6-12| 9.9-7| 4.8-8| 5.4-8| 1.2-7| 7.9-7| 4.4-7	30
be200.8.3 | 201 | 201;	106|119|1993	-4.62539622 4 |-4.62540239 4	2.4-12| 9.9-7| 2.5-8| 9.1-8| 2.6-7| 1.6-7| 6.7-7	37
be200.8.4 | 201 | 201;	78| 89|1752	-4.66211953 4 |-4.66212874 4	5.8-12| 9.9-7| 3.1-8| 6.4-8| 9.7-7| 4.9-7| 9.9-7	33
be200.8.5 | 201 | 201;	91| 99|1956	-4.42712301 4 |-4.42712517 4	1.5-12| 9.9-7| 2.1-8| 4.1-8| 1.1-7| 1.3-7| 2.4-7	37
be200.8.6 | 201 | 201;	70| 71|1900	-5.12188803 4 |-5.12189105 4	5.3-8| 9.8-7| 1.3-7| 0.1-16| 2.8-8| 0.4-16| 2.9-7	33
be200.8.7 | 201 | 201;	93|103|2043	-4.93528243 4 |-4.93529731 4	4.3-12| 9.8-7| 4.1-8| 5.6-8| 5.5-7| 8.0-7| 1.5-6	38
be200.8.8 | 201 | 201;	94|101|1947	-4.76891672 4 |-4.76891887 4	2.2-8| 9.9-7| 6.0-8| 0.1-16| 1.9-9| 0.2-16| 2.3-7	36
be200.8.9 | 201 | 201;	85| 95|1967	-4.54956017 4 |-4.54956404 4	6.9-8| 9.8-7| 1.6-7| 0.2-16| 2.6-8| 0.1-16| 4.3-7	37
be200.8.10 | 201 | 201;	84| 95|1857	-4.57430239 4 |-4.57431501 4	5.3-12| 9.9-7| 3.0-8| 5.6-8| 6.2-7| 1.7-7| 1.4-6	35
be250.1 | 251 | 251;	122|123|2800	-2.51194635 4 |-2.51194398 4	1.1-7| 9.9-7| 1.3-7| 0.2-16| 1.8-8| 4.6-16| -4.7-7	1:13
be250.2 | 251 | 251;	121|121|2842	-2.36814919 4 |-2.36814545 4	1.2-12| 9.9-7| 1.1-8| 2.0-8| 1.5-8| 2.3-8| -7.9-7	1:12
be250.3 | 251 | 251;	84| 89|2200	-2.40000031 4 |-2.39999662 4	1.3-7| 9.9-7| 1.2-7| 0.1-16| 1.2-8| 1.4-16| -7.7-7	59
be250.4 | 251 | 251;	208|209|3850	-2.57203185 4 |-2.57202544 4	9.7-9| 9.9-7| 5.5-8| 0.0-16| 2.0-8| 0.2-16| -1.2-6	1:42
be250.5 | 251 | 251;	115|127|2791	-2.23747084 4 |-2.23746795 4	4.1-12| 9.9-7| 3.1-9| 3.4-8| 8.2-9| 2.9-7| -6.5-7	1:15

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
be250.6 | 251 | 251;	120|141|2452	-2.40188386 4 |-2.40188614 4	4.2-12| 9.9-7| 1.6-8| 3.4-8| 1.3-7| 8.2-8| 4.7-7	1:08
be250.7 | 251 | 251;	127|141|2664	-2.51189432 4 |-2.51189682 4	8.0-12| 9.9-7| 9.0-9| 4.4-8| 5.7-7| 1.2-7| 5.0-7	1:12
be250.8 | 251 | 251;	99|113|2172	-2.50203920 4 |-2.50204534 4	8.8-12| 9.9-7| 1.8-8| 4.0-8| 2.1-7| 1.1-7| 1.2-6	1:00
be250.9 | 251 | 251;	189|191|3319	-2.13970633 4 |-2.13970185 4	3.2-12| 9.9-7| 1.1-8| 3.9-8| 2.2-7| 1.8-7| -1.0-6	1:32
be250.10 | 251 | 251;	174|189|2695	-2.43550234 4 |-2.43550549 4	1.2-8| 9.9-7| 7.3-8| 0.0-16| 1.8-9| 0.5-16| 6.5-7	1:18
bqp100-1 | 101 | 101;	23| 23|1229	-8.38038788 3 |-8.38038456 3	2.4-7| 9.4-7| 6.4-7| 0.5-16| 1.4-9| 1.5-15| -2.0-7	06
bqp100-2 | 101 | 101;	126|139|1998	-1.14892554 4 |-1.14892770 4	1.1-12| 9.9-7| 1.5-8| 6.7-8| 2.2-7| 1.2-7| 9.4-7	13
bqp100-3 | 101 | 101;	12| 12|1999	-1.31531838 4 |-1.31532196 4	1.3-7| 9.9-7| 6.3-7| 0.1-16| 7.9-8| 1.3-16| 1.4-6	08
bqp100-4 | 101 | 101;	96| 97|1214	-1.07318905 4 |-1.07318888 4	5.6-8| 9.5-7| 4.5-7| 0.1-16| 1.7-7| 0.6-16| -7.9-8	08
bqp100-5 | 101 | 101;	243|250|1819	-9.48702758 3 |-9.48702828 3	1.9-12| 9.9-7| 5.6-8| 8.8-8| 8.7-8| 4.7-7| 3.7-8	15
bqp100-6 | 101 | 101;	23| 23|1363	-1.08247749 4 |-1.08247423 4	9.9-7| 9.9-7| 5.5-16| 2.8-8| 6.8-14| 1.0-7| -1.5-6	06
bqp100-7 | 101 | 101;	49| 55|1342	-1.06891506 4 |-1.06891550 4	5.9-12| 9.9-7| 1.8-8| 2.1-8| 6.2-7| 7.9-9| 2.1-7	07
bqp100-8 | 101 | 101;	67| 67|1717	-1.17699888 4 |-1.17699808 4	9.4-8| 9.6-7| 4.1-7| 0.2-16| 2.1-7| 0.8-16| -3.4-7	11
bqp100-9 | 101 | 101;	37| 37|2206	-1.17332529 4 |-1.17332507 4	1.1-7| 9.7-7| 6.1-7| 0.1-16| 7.0-8| 2.2-16| -9.3-8	10
bqp100-10 | 101 | 101;	72| 73|2208	-1.29802732 4 |-1.29802542 4	4.9-8| 9.9-7| 1.5-7| 0.1-16| 4.5-8| 0.2-16| -7.3-7	12
bqp250-1 | 251 | 251;	153|168|3069	-4.76631049 4 |-4.76632099 4	2.0-12| 9.9-7| 1.2-8| 8.3-9| 1.5-8| 7.2-8| 1.1-6	1:20
bqp250-2 | 251 | 251;	115|134|2410	-4.72223474 4 |-4.72224686 4	3.0-7| 9.6-7| 3.7-8| 0.3-16| 2.1-8| 0.9-16| 1.3-6	1:02
bqp250-3 | 251 | 251;	93|105|2107	-5.10766294 4 |-5.10768402 4	9.9-7| 9.8-7| 1.0-15| 5.4-9| 1.2-12| 3.6-8| 2.1-6	53
bqp250-4 | 251 | 251;	92| 94|2350	-4.33125367 4 |-4.33125237 4	3.3-7| 9.9-7| 3.3-7| 0.8-16| 7.7-9| 1.2-15| -1.5-7	59
bqp250-5 | 251 | 251;	147|166|2580	-5.00043271 4 |-5.00043510 4	1.9-8| 9.9-7| 6.1-8| 0.0-16| 2.0-8| 0.1-16| 2.4-7	1:16
bqp250-6 | 251 | 251;	106|122|2126	-4.36688521 4 |-4.36689896 4	1.3-7| 9.9-7| 2.5-7| 0.2-16| 7.3-8| 2.2-16| 1.6-6	1:03
bqp250-7 | 251 | 251;	114|137|2407	-4.89216690 4 |-4.89218055 4	1.0-11| 7.9-7| 8.4-9| 4.4-8| 9.9-7| 3.7-7| 1.4-6	1:09
bqp250-8 | 251 | 251;	93|113|2008	-3.87795379 4 |-3.87795611 4	6.8-12| 9.5-7| 5.0-8| 6.4-8| 8.8-8| 1.5-7| 3.0-7	57
bqp250-9 | 251 | 251;	96|114|2057	-5.14975005 4 |-5.14975675 4	9.8-12| 9.8-7| 1.7-8| 1.4-7| 9.9-7| 5.2-7| 6.5-7	58
bqp250-10 | 251 | 251;	103|123|2188	-4.30145022 4 |-4.30145573 4	3.1-12| 9.9-7| 6.7-9| 2.1-8| 2.2-9| 4.4-9| 6.4-7	1:01
bqp500-1 | 501 | 501;	138|171|2499	-1.25964032 5 |-1.25964547 5	1.6-11| 9.9-7| 6.5-9| 6.8-9| 9.1-7| 1.6-7| 2.0-6	5:20
bqp500-2 | 501 | 501;	142|194|2390	-1.36011042 5 |-1.36011154 5	6.8-8| 9.9-7| 8.2-8| 0.1-16| 4.8-9| 0.3-16| 4.1-7	5:29
bqp500-3 | 501 | 501;	135|180|2390	-1.38453338 5 |-1.38453549 5	2.0-8| 9.7-7| 3.8-7| 0.5-16| 6.6-8| 2.8-16| 7.6-7	6:31
bqp500-4 | 501 | 501;	128|174|2390	-1.39328333 5 |-1.39328503 5	2.3-7| 9.9-7| 7.1-8| 0.2-16| 2.1-9| 6.0-16| 6.1-7	6:08
bqp500-5 | 501 | 501;	169|206|2910	-1.34092095 5 |-1.34092382 5	4.5-8| 9.9-7| 4.8-8| 0.0-16| 1.0-8| 0.2-16| 1.1-6	7:25
bqp500-6 | 501 | 501;	167|214|2780	-1.30764344 5 |-1.30764464 5	1.1-8| 9.8-7| 1.8-7| 0.3-16| 3.4-9| 2.9-16| 4.6-7	7:30
bqp500-7 | 501 | 501;	157|202|2742	-1.31491374 5 |-1.31491671 5	1.5-11| 9.8-7| 1.1-8| 3.0-8| 3.8-7| 2.5-7| 1.1-6	7:27
bqp500-8 | 501 | 501;	142|184|2520	-1.33489832 5 |-1.33489923 5	1.7-7| 9.9-7| 7.9-8| 0.2-16| 2.1-8| 0.4-16| 3.4-7	6:26
bqp500-9 | 501 | 501;	145|193|2495	-1.30288190 5 |-1.30288591 5	1.5-11| 9.9-7| 1.2-8| 4.5-8| 1.6-7| 2.7-7| 1.5-6	6:37
bqp500-10 | 501 | 501;	138|177|2473	-1.38534303 5 |-1.38534723 5	1.5-11| 9.8-7| 1.1-8| 1.6-8| 4.1-7| 2.4-7| 1.5-6	6:36
gka8a | 101 | 101;	0| 0|4267	-1.11972022 4 |-1.11971737 4	9.8-7| 7.6-7| 0.8-15| 3.0-9| 2.9-13| 2.6-8| -1.3-6	15
gka9b | 101 | 101;	3| 7|1047	-1.37000000 2 |-1.37000053 2	6.4-10| 2.5-9| 1.1-10| 6.3-16| 1.8-11| 2.1-16| 1.9-7	04
gka10b | 126 | 126;	1| 1|1315	-1.55571891 2 |-1.55567299 2	1.2-12| 5.1-7| 1.2-7| 9.9-7| 5.4-8| 1.8-7| -1.5-5	08
gka7c | 101 | 101;	135|135|2010	-7.31644973 3 |-7.31643789 3	3.0-8| 9.9-7| 2.1-7| 0.0-16| 1.3-7| 0.0-16| -8.1-7	12
gka1d | 101 | 101;	112|112|2043	-6.52842897 3 |-6.52842810 3	4.5-8| 9.7-7| 2.1-7| 0.0-16| 5.9-8| 0.1-16| -6.7-8	12
gka2d | 101 | 101;	39| 42|1319	-6.99071129 3 |-6.99069459 3	3.5-12| 9.9-7| 5.6-8| 8.2-8| 2.1-7| 2.5-7| -1.2-6	08
gka3d | 101 | 101;	46| 46|1306	-9.73433037 3 |-9.73434598 3	2.8-12| 9.9-7| 2.9-8| 4.1-7| 2.5-7| 5.9-7| 8.0-7	08
gka4d | 101 | 101;	90| 90|1210	-1.12784134 4 |-1.12784212 4	7.4-8| 9.7-7| 4.5-7| 0.2-16| 5.2-8| 4.3-16| 3.5-7	09
gka5d | 101 | 101;	31| 33|1276	-1.23988659 4 |-1.23988547 4	2.6-12| 9.7-7| 6.9-8| 1.8-7| 1.4-7| 9.1-7| -4.5-7	07
gka6d | 101 | 101;	23| 23|1391	-1.49293396 4 |-1.49293511 4	9.9-7| 9.9-7| 6.5-16| 2.0-7| 1.6-14| 3.4-7| 3.9-7	06
gka7d | 101 | 101;	32| 32|1151	-1.53758304 4 |-1.53757988 4	9.8-7| 8.9-7| 5.5-16| 5.9-8| 3.9-14| 1.4-7| -1.0-6	07
gka8d | 101 | 101;	46| 46|2653	-1.70053607 4 |-1.70053546 4	4.9-12| 9.9-7| 4.1-9| 5.2-8| 2.6-8| 3.8-7| -1.8-7	13
gka9d | 101 | 101;	4| 4|1373	-1.65338958 4 |-1.65338438 4	5.1-8| 9.5-7| 2.7-8| 0.1-16| 7.8-9| 0.9-16| -1.6-6	06
gka10d | 101 | 101;	32| 32|1234	-2.01085766 4 |-2.01085650 4	1.6-12| 9.9-7| 1.9-8| 3.5-8| 1.1-7| 4.9-8| -2.9-7	06
gka1e | 201 | 201;	121|123|2921	-1.70698173 4 |-1.70698064 4	2.5-12| 9.9-7| 1.1-8| 2.0-8| 1.4-8| 1.5-8| -3.2-7	48
gka2e | 201 | 201;	106|114|2270	-2.49176332 4 |-2.49176708 4	4.8-8| 9.9-7| 5.6-8| 0.1-16| 4.0-9| 0.3-16| 7.5-7	39
gka3e | 201 | 201;	103|111|2082	-2.68987429 4 |-2.68987667 4	3.0-8| 9.9-7| 1.9-7| 0.1-16| 5.3-8| 0.6-16| 4.4-7	36
gka4e | 201 | 201;	100|101|2200	-3.72251472 4 |-3.72250934 4	7.5-8| 9.9-7| 2.0-7| 0.1-16| 4.0-8| 0.2-16| -7.2-7	38
gka5e | 201 | 201;	119|128|2431	-3.80023046 4 |-3.80023315 4	1.6-7| 9.8-7| 2.3-7| 0.3-16| 4.9-8| 5.3-16| 3.5-7	42
gka1f | 501 | 501;	166|203|2780	-6.55590598 4 |-6.55591369 4	1.3-8| 9.8-7| 1.6-7| 0.3-16| 1.3-8| 6.3-16| 5.9-7	6:32
gka2f | 501 | 501;	205|242|3541	-1.07931739 5 |-1.07932064 5	1.0-11| 9.9-7| 6.0-9| 9.1-9| 1.6-7| 8.1-8| 1.5-6	7:54
gka3f | 501 | 501;	174|216|2954	-1.50150987 5 |-1.50151193 5	6.4-12| 9.9-7| 1.5-8| 3.4-8| 5.2-8| 6.6-7| 6.8-7	6:51
gka4f | 501 | 501;	183|222|3101	-1.87087878 5 |-1.87087908 5	4.2-12| 9.9-7| 4.2-9| 2.4-8| 2.4-8| 2.0-7| 8.2-8	7:10
gka5f | 501 | 501;	142|187|2520	-2.06914264 5 |-2.06914258 5	1.8-7| 9.9-7| 7.1-8| 0.2-16| 1.3-8| 1.9-16| -1.5-8	5:53

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
soybean-small.2 | 48 | 47;	0| 0|463	4.00363442 2 | 4.00364397 2	7.4-13| 9.9-7| 0 | 2.4-7| 2.1-9| 1.1-7| -1.2-6	01
soybean-small.3 | 48 | 47;	0| 0|212	2.46459277 2 | 2.46459259 2	9.4-13| 9.6-7| 4.5-7| 7.9-7| 3.5-8| 5.8-8| 3.6-8	01
soybean-small.4 | 48 | 47;	0| 0|440	2.04274813 2 | 2.04275448 2	1.6-12| 9.5-7| 0 | 4.7-7| 5.8-7| 4.0-7| -1.6-6	01
soybean-small.5 | 48 | 47;	0| 0|275	1.81795753 2 | 1.81795819 2	2.0-12| 9.6-7| 1.2-7| 9.6-7| 3.1-7| 1.9-7| -1.8-7	01
soybean-small.6 | 48 | 47;	0| 0|368	1.63872487 2 | 1.63872595 2	5.0-12| 2.8-7| 0 | 9.1-7| 1.6-7| 1.9-7| -3.3-7	01
soybean-small.7 | 48 | 47;	0| 0|385	1.47247052 2 | 1.47247394 2	2.5-12| 9.8-7| 0 | 2.8-7| 8.6-8| 1.4-7| -1.2-6	01
soybean-small.8 | 48 | 47;	24| 24|1012	1.33486218 2 | 1.33486525 2	1.8-13| 9.3-7| 2.7-7| 6.5-7| 8.9-8| 1.2-7| -1.1-6	03
soybean-small.9 | 48 | 47;	0| 0|632	1.21410328 2 | 1.21410703 2	5.4-12| 2.9-7| 0 | 9.9-7| 1.0-8| 6.3-8| -1.5-6	02
soybean-small.10 | 48 | 47;	0| 0|327	1.10776114 2 | 1.10777427 2	3.8-12| 9.8-7| 7.9-9| 4.0-7| 2.3-8| 9.3-8| -5.9-6	01
soybean-small.11 | 48 | 47;	1| 1|700	1.02267594 2 | 1.02267645 2	2.7-8| 1.4-7| 8.7-7| 1.8-16| 1.0-7| 0.5-16| -2.5-7	02
soybean-large.2 | 308 | 307;	2| 2|1171	5.46342122 3 | 5.46342235 3	8.1-13| 9.2-7| 8.0-9| 9.9-7| 1.8-8| 6.6-7| -1.0-7	29
soybean-large.3 | 308 | 307;	2| 2|934	4.57580592 3 | 4.57580844 3	4.6-13| 7.2-7| 1.7-8| 2.7-7| 4.5-8| 9.3-8| -2.8-7	25
soybean-large.4 | 308 | 307;	52| 52|1506	4.04637305 3 | 4.04637422 3	1.0-13| 7.7-7| 2.8-7| 8.7-7| 2.7-8| 3.0-7| -1.4-7	52
soybean-large.5 | 308 | 307;	2| 2|814	3.63158072 3 | 3.63158133 3	2.6-13| 9.8-7| 0 | 9.6-7| 1.7-8| 2.0-7| -8.4-8	22
soybean-large.6 | 308 | 307;	0| 0|413	3.26767677 3 | 3.26767798 3	4.1-12| 9.4-7| 1.3-7| 5.7-7| 4.3-7| 1.1-7| -1.9-7	12
soybean-large.7 | 308 | 307;	2| 2|757	3.00627224 3 | 3.00627274 3	1.7-13| 9.2-7| 6.0-7| 8.7-7| 8.2-8| 6.9-8| -8.3-8	25
soybean-large.8 | 308 | 307;	2| 2|726	2.76816908 3 | 2.76817008 3	7.4-14| 9.9-7| 3.3-7| 5.9-7| 5.0-8| 3.0-8| -1.8-7	22
soybean-large.9 | 308 | 307;	6| 6|850	2.55268855 3 | 2.55268925 3	2.3-13| 9.5-7| 6.1-7| 9.7-7| 6.7-8| 1.9-7| -1.4-7	24
soybean-large.10 | 308 | 307;	0| 0|359	2.36925518 3 | 2.36925566 3	4.3-12| 8.5-7| 4.7-8| 9.5-7| 1.8-7| 4.2-8| -1.0-7	10
soybean-large.11 | 308 | 307;	0| 0|948	2.23131727 3 | 2.23131261 3	3.0-11| 6.5-7| 1.6-7| 8.7-8| 6.4-7| 4.3-7| 1.0-6	25
spambase-small.2 | 301 | 300;	0| 0|434	2.47157686 7 | 2.47158234 7	4.8-12| 9.4-7| 6.0-8| 7.0-7| 1.4-7| 9.1-8| -1.1-6	12
spambase-small.3 | 301 | 300;	2| 2|526	9.88376699 6 | 9.88375689 6	8.9-13| 8.9-7| 7.7-7| 9.7-7| 4.9-7| 1.9-7| 5.1-7	14
spambase-small.4 | 301 | 300;	31| 31|980	6.46941336 6 | 6.46938487 6	8.9-13| 8.9-7| 5.0-7| 9.9-7| 2.0-7| 1.3-7| 2.2-6	33
spambase-small.5 | 301 | 300;	0| 0|596	4.88892526 6 | 4.88913614 6	4.1-7| 9.9-7| 7.5-16| 6.6-7| 3.1-15| 9.6-7| -2.2-5	16
spambase-small.6 | 301 | 300;	8| 8|793	3.96283109 6 | 3.96292724 6	7.1-12| 9.3-7| 0 | 7.0-7| 8.4-7| 3.7-7| -1.2-5	26
spambase-small.7 | 301 | 300;	8| 8|842	3.21840824 6 | 3.21827500 6	9.8-7| 4.2-7| 7.4-16| 7.9-7| 7.2-16| 7.7-7| 2.1-5	27
spambase-small.8 | 301 | 300;	1| 1|901	2.63464441 6 | 2.63461016 6	4.6-12| 9.9-7| 0 | 8.9-7| 2.8-8| 1.4-7| 6.5-6	26
spambase-small.9 | 301 | 300;	8| 8|963	2.14747984 6 | 2.14761786 6	2.8-11| 9.6-7| 3.1-8| 6.5-7| 3.2-7| 5.3-7| -3.2-5	32
spambase-small.10 | 301 | 300;	8| 8|1170	1.77114508 6 | 1.77099199 6	5.7-14| 8.4-7| 1.4-7| 6.4-7| 4.4-7| 9.1-7| 4.3-5	38
spambase-small.11 | 301 | 300;	8| 8|1219	1.49977936 6 | 1.49998112 6	3.1-11| 9.9-7| 0 | 6.6-7| 6.9-7| 8.3-7| -6.7-5	37
spambase-medium.2 | 901 | 900;	0| 0|574	2.04673218 8 | 2.04671906 8	4.5-11| 9.8-7| 0 | 4.0-8| 3.7-7| 6.0-8| 3.2-6	3:22
spambase-medium.3 | 901 | 900;	2| 2|1306	1.13852091 8 | 1.13852269 8	3.1-11| 9.8-7| 1.1-9| 9.7-7| 2.9-9| 1.2-7| -7.8-7	7:41
spambase-medium.4 | 901 | 900;	8| 8|3282	6.47576502 7 | 6.47607483 7	1.1-12| 9.5-7| 2.2-7| 3.9-7| 6.3-7| 9.9-7| -2.4-5	25:02
spambase-medium.5 | 901 | 900;	17| 17|2314	4.47388301 7 | 4.47390672 7	1.3-10| 9.9-7| 0 | 7.6-7| 2.9-8| 3.8-8| -2.6-6	19:12
spambase-medium.6 | 901 | 900;	8| 8|1241	3.41689509 7 | 3.41690625 7	5.5-11| 9.9-7| 0 | 9.1-7| 3.7-8| 4.3-8| -1.6-6	12:03
spambase-medium.7 | 901 | 900;	8| 8|1525	2.68389873 7 | 2.68390611 7	9.4-11| 9.4-7| 0 | 9.9-7| 3.3-8| 1.4-8| -1.4-6	11:43
spambase-medium.8 | 901 | 900;	8| 8|1219	2.14451210 7 | 2.14450658 7	9.4-11| 9.9-7| 0 | 9.4-7| 6.0-8| 7.2-9| 1.3-6	11:46
spambase-medium.9 | 901 | 900;	8| 8|1292	1.74857865 7 | 1.74853340 7	1.3-10| 5.2-7| 2.2-8| 9.9-7| 8.1-8| 2.2-7| 1.3-5	11:11
spambase-medium.10 | 901 | 900;	8| 8|1176	1.44394158 7 | 1.44377147 7	2.7-13| 8.8-7| 7.2-8| 4.0-7| 4.4-9| 8.6-7| 5.9-5	10:35
spambase-medium.11 | 901 | 900;	8| 8|1519	1.18363554 7 | 1.18336465 7	9.7-7| 9.9-7| 1.2-15| 1.9-7| 6.6-15| 9.0-7| **1.1-4**	14:26
spambase-large.2 | 1501 | 1500;	0| 0|535	4.71138593 8 | 4.71150439 8	9.9-7| 9.9-7| 1.6-15| 3.0-7| 4.3-16| 2.0-7| -1.3-5	11:07
spambase-large.3 | 1501 | 1500;	8| 8|1844	2.36009657 8 | 2.36013239 8	2.5-10| 8.9-7| 2.3-7| 9.9-7| 6.0-7| 5.3-8| -7.6-6	1:40:31
spambase-large.4 | 1501 | 1500;	8| 8|4519	1.39698995 8 | 1.39699718 8	8.7-10| 9.8-7| 0 | 9.9-7| 6.1-9| 6.7-8| -2.6-6	2:49:39
spambase-large.5 | 1501 | 1500;	8| 8|9184	1.02748129 8 | 1.02754393 8	3.8-13| 9.7-7| 2.6-8| 5.7-7| 2.5-8| 9.6-7| -3.0-5	4:49:37
spambase-large.6 | 1501 | 1500;	8| 8|2798	7.27756732 7 | 7.27685611 7	8.0-12| 9.9-7| 0 | 9.1-7| 4.5-7| 8.6-7| 4.9-5	2:07:59
spambase-large.7 | 1501 | 1500;	8| 8|2107	5.58150191 7 | 5.58157168 7	5.5-10| 5.1-7| 9.3-9| 9.9-7| 3.2-8| 1.0-7| -6.2-6	1:52:04
spambase-large.8 | 1501 | 1500;	8| 8|1498	4.34964142 7 | 4.34982631 7	3.5-10| 5.8-7| 0 | 9.9-7| 2.3-7| 3.4-7| -2.1-5	33:09
spambase-large.9 | 1501 | 1500;	8| 8|2158	3.51895769 7 | 3.51829566 7	1.2-11| 9.8-7| 1.8-7| 5.5-7| 4.3-7| 8.0-7| 9.4-5	1:51:14
spambase-large.10 | 1501 | 1500;	8| 8|2429	2.96668169 7 | 2.96696498 7	1.0-9| 5.4-7| 0 | 9.9-7| 2.9-7| 4.2-7| -4.8-5	1:02:04
spambase-large.11 | 1501 | 1500;	8| 8|2164	2.49404631 7 | 2.49448474 7	1.9-12| 9.9-7| 6.6-8| 7.2-7| 5.0-7| 6.8-7| -8.8-5	55:19
abalone-small.2 | 201 | 200;	0| 0|384	8.58559226 2 | 8.58556840 2	1.3-12| 5.8-7| 0 | 9.9-7| 6.5-7| 2.6-7| 1.4-6	05
abalone-small.3 | 201 | 200;	0| 0|268	4.37052658 2 | 4.37061770 2	1.5-12| 9.8-7| 8.0-9| 9.6-8| 1.4-7| 4.0-8| -1.0-5	03
abalone-small.4 | 201 | 200;	0| 0|486	2.55992430 2 | 2.55992748 2	6.6-12| 2.2-7| 1.2-8| 9.9-7| 3.4-8| 1.8-8| -6.2-7	07
abalone-small.5 | 201 | 200;	0| 0|554	1.66802413 2 | 1.66804116 2	8.1-12| 9.9-7| 0 | 4.1-7| 4.1-7| 1.4-7| -5.1-6	06
abalone-small.6 | 201 | 200;	0| 0|523	1.17558277 2 | 1.17561963 2	1.0-11| 8.2-7| 0 | 9.9-7| 1.1-7| 4.1-8| -1.6-5	07
abalone-small.7 | 201 | 200;	8| 8|1012	9.09692747 1 | 9.09734973 1	5.9-12| 9.9-7| 0 | 1.4-7| 6.3-7| 2.4-7| -2.3-5	13
abalone-small.8 | 201 | 200;	8| 8|1054	7.50164881 1 | 7.50232867 1	9.8-7| 9.6-7| 3.9-16| 9.5-8| 2.3-15| 5.0-7| -4.5-5	16
abalone-small.9 | 201 | 200;	8| 8|1076	6.34769692 1 | 6.34841919 1	9.7-7| 8.4-7| 4.0-16| 2.4-7| 2.9-14| 5.6-7| -5.6-5	14
abalone-small.10 | 201 | 200;	8| 8|2085	5.30409909 1 | 5.30469626 1	1.7-11| 9.9-7| 0 | 9.6-8| 3.2-7| 2.3-7| -5.6-5	30

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems
($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
abalone-small.11 | 201 | 200;	8| 8|1776	4.49348394 1 | 4.49411017 1	2.6-11| 9.9-7| 1.7-7| 9.6-8| 6.5-7| 4.3-7| -6.9-5	26
abalone-medium.2 | 401 | 400;	3| 3|500	2.26214379 3 | 2.26215611 3	7.2-8| 9.5-7| 8.2-7| 0.1-16| 9.0-8| 0.0-16| -2.7-6	26
abalone-medium.3 | 401 | 400;	5| 5|611	1.15442059 3 | 1.15441788 3	8.6-13| 9.8-7| 3.4-9| 9.9-7| 1.1-7| 1.3-7| 1.2-6	32
abalone-medium.4 | 401 | 400;	0| 0|378	6.86064887 2 | 6.86064337 2	9.7-12| 9.9-7| 0 | 9.0-8| 5.0-8| 1.9-8| 4.0-7	19
abalone-medium.5 | 401 | 400;	0| 0|578	4.68709535 2 | 4.68711908 2	2.9-11| 2.8-7| 0 | 9.9-7| 3.1-7| 5.9-8| -2.5-6	31
abalone-medium.6 | 401 | 400;	0| 0|608	3.44630501 2 | 3.44639813 2	9.8-7| 5.7-7| 5.2-16| 3.5-7| 3.7-15| 2.9-7| -1.3-5	37
abalone-medium.7 | 401 | 400;	8| 8|1084	2.68321759 2 | 2.68330068 2	3.7-11| 8.4-7| 0 | 9.6-7| 4.3-8| 3.3-8| -1.5-5	1:08
abalone-medium.8 | 401 | 400;	8| 8|981	2.16660814 2 | 2.16662931 2	3.9-11| 8.2-7| 0 | 9.8-7| 2.5-7| 3.3-8| -4.9-6	1:00
abalone-medium.9 | 401 | 400;	8| 8|1063	1.83116123 2 | 1.83122772 2	9.7-7| 8.3-7| 4.6-16| 2.7-7| 1.3-14| 3.9-7| -1.8-5	1:14
abalone-medium.10 | 401 | 400;	8| 8|1328	1.60974189 2 | 1.60991692 2	2.8-10| 9.9-7| 2.0-7| 4.9-7| 7.2-7| 2.3-7| -5.4-5	1:24
abalone-medium.11 | 401 | 400;	8| 8|1212	1.40895099 2 | 1.40913918 2	2.1-10| 9.9-7| 0 | 7.7-7| 2.9-7| 3.2-7| -6.7-5	1:21
abalone-large.2 | 1001 | 1000;	0| 0|576	5.52269325 3 | 5.52256503 3	9.9-7| 5.2-7| 1.4-15| 2.2-7| 1.8-15| 1.0-7| 1.2-5	5:01
abalone-large.3 | 1001 | 1000;	21| 21|762	2.81040989 3 | 2.81042183 3	2.1-13| 9.2-7| 7.6-7| 6.4-7| 3.9-8| 2.2-7| -2.1-6	7:29
abalone-large.4 | 1001 | 1000;	0| 0|545	1.72764378 3 | 1.72763706 3	2.7-11| 4.9-7| 0 | 2.0-7| 9.9-7| 7.9-8| 1.9-6	6:43
abalone-large.5 | 1001 | 1000;	38| 38|797	1.21466288 3 | 1.21471600 3	3.3-12| 9.5-7| 1.3-7| 4.6-7| 7.6-7| 2.6-9| -2.2-5	11:45
abalone-large.6 | 1001 | 1000;	8| 8|781	9.17362617 2 | 9.17389149 2	6.7-11| 9.9-7| 0 | 6.6-7| 5.2-7| 2.3-7| -1.4-5	9:12
abalone-large.7 | 1001 | 1000;	8| 8|1104	7.26132923 2 | 7.26154920 2	9.9-7| 7.4-7| 0.8-15| 5.7-7| 8.4-15| 1.8-7| -1.5-5	12:09
abalone-large.8 | 1001 | 1000;	8| 8|1024	5.89228809 2 | 5.89292994 2	9.9-7| 7.5-7| 0.8-15| 3.6-7| 3.8-16| 6.8-8| -5.4-5	11:58
abalone-large.9 | 1001 | 1000;	8| 8|1337	5.00465746 2 | 5.00516610 2	9.9-7| 8.4-7| 7.8-16| 2.5-7| 5.2-16| 2.9-7| -5.1-5	16:07
abalone-large.10 | 1001 | 1000;	8| 8|1761	4.42618246 2 | 4.42633818 2	4.4-10| 2.7-7| 0 | 7.8-7| 8.4-7| 1.9-7| -1.8-5	16:38
abalone-large.11 | 1001 | 1000;	8| 8|1969	3.93913466 2 | 3.93950575 2	4.6-10| 9.9-7| 2.3-7| 5.7-8| 9.2-7| 3.5-7| -4.7-5	18:04
segment-small.2 | 401 | 400;	8| 8|1916	4.06441107 6 | 4.06441484 6	1.9-11| 9.2-7| 1.1-8| 7.7-7| 2.4-8| 2.4-7| -4.6-7	1:41
segment-small.3 | 401 | 400;	60| 60|1696	2.80588330 6 | 2.80588506 6	2.9-13| 8.9-7| 3.6-7| 9.1-7| 7.0-8| 3.4-7| -3.1-7	1:56
segment-small.4 | 401 | 400;	6| 6|1233	2.26904580 6 | 2.26904865 6	2.1-12| 9.8-7| 0 | 9.9-7| 6.2-11| 2.5-7| -6.3-7	1:07
segment-small.5 | 401 | 400;	90| 90|2676	1.92834731 6 | 1.92835299 6	2.0-13| 8.5-7| 3.3-7| 8.9-7| 3.0-7| 4.0-7| -1.5-6	3:10
segment-small.6 | 401 | 400;	17| 17|1956	1.67079140 6 | 1.67079398 6	3.5-12| 8.0-7| 0 | 9.9-7| 7.5-10| 3.0-7| -7.7-7	1:59
segment-small.7 | 401 | 400;	12| 12|980	1.46078808 6 | 1.46078800 6	4.8-13| 8.3-7| 4.0-7| 7.3-7| 6.1-8| 9.1-8| 2.6-8	1:02
segment-small.8 | 401 | 400;	20| 20|1116	1.29257452 6 | 1.29257878 6	5.0-13| 9.9-7| 3.1-7| 9.3-7| 1.8-8| 7.2-8| -1.6-6	1:20
segment-small.9 | 401 | 400;	4| 4|844	1.15740240 6 | 1.15740528 6	4.8-13| 8.6-7| 4.9-7| 4.6-7| 6.0-8| 4.2-8| -1.2-6	56
segment-small.10 | 401 | 400;	32| 32|986	1.04530881 6 | 1.04531060 6	4.6-13| 8.9-7| 3.0-7| 9.1-7| 5.5-8| 8.0-8| -8.6-7	1:25
segment-small.11 | 401 | 400;	16| 16|1290	9.53437588 5 | 9.53439378 5	4.1-12| 9.0-7| 3.1-9| 9.9-7| 1.1-8| 5.9-8| -9.4-7	1:33
segment-medium.2 | 701 | 700;	8| 8|1143	1.05087573 7 | 1.05088196 7	2.6-11| 9.9-7| 2.5-7| 9.2-8| 5.6-7| 8.8-9| -3.0-6	4:07
segment-medium.3 | 701 | 700;	2| 2|737	7.33920884 6 | 7.33925216 6	6.6-12| 9.6-7| 3.2-7| 9.0-7| 8.2-7| 3.1-7| -3.0-6	2:36
segment-medium.4 | 701 | 700;	8| 8|1889	5.68021106 6 | 5.68021670 6	8.6-12| 6.3-7| 2.7-9| 9.9-7| 7.6-9| 1.5-7| -5.0-7	6:28
segment-medium.5 | 701 | 700;	8| 8|2163	4.83142547 6 | 4.83143345 6	9.8-12| 8.8-7| 2.9-10| 9.9-7| 8.5-10| 1.7-7| -8.3-7	8:15
segment-medium.6 | 701 | 700;	2| 2|2861	4.19190458 6 | 4.19191614 6	7.9-12| 9.7-7| 2.0-9| 9.9-7| 6.0-9| 2.2-7| -1.4-6	9:23
segment-medium.7 | 701 | 700;	4| 4|3112	3.70130906 6 | 3.70132216 6	9.7-12| 9.3-7| 7.6-12| 9.9-7| 2.3-11| 2.2-7| -1.8-6	10:41
segment-medium.8 | 701 | 700;	2| 2|2824	3.30331076 6 | 3.30332003 6	0.9-15| 9.0-7| 6.2-7| 1.3-7| 5.6-7| 8.4-8| -1.4-6	8:45
segment-medium.9 | 701 | 700;	8| 8|2390	2.95167535 6 | 2.95168923 6	1.8-11| 9.9-7| 7.7-9| 9.1-7| 2.7-8| 1.2-7| -2.4-6	7:30
segment-medium.10 | 701 | 700;	2| 2|1779	2.64262878 6 | 2.64263589 6	1.3-11| 7.8-7| 4.4-10| 9.9-7| 1.6-9| 5.5-8| -1.3-6	5:30
segment-medium.11 | 701 | 700;	8| 8|1722	2.37625318 6 | 2.37628093 6	2.9-11| 8.9-7| 0 | 9.7-7| 2.1-8| 6.4-7| -5.8-6	8:32
segment-large.2 | 1001 | 1000;	8| 8|1191	1.47176055 7 | 1.47174710 7	9.7-12| 9.4-7| 0 | 1.6-7| 9.9-7| 6.5-8| 4.6-6	9:16
segment-large.3 | 1001 | 1000;	0| 0|373	1.03929738 7 | 1.03929372 7	6.1-12| 9.9-7| 0 | 9.7-7| 3.9-7| 1.1-7| 1.8-6	2:43
segment-large.4 | 1001 | 1000;	2| 2|1879	8.16944543 6 | 8.16945493 6	7.0-12| 9.0-7| 1.3-9| 9.9-7| 3.7-9| 2.1-7| -5.8-7	13:52
segment-large.5 | 1001 | 1000;	8| 8|2449	6.98489394 6 | 6.98490266 6	1.2-11| 9.9-7| 2.3-9| 9.7-7| 6.8-9| 2.2-7| -6.2-7	19:06
segment-large.6 | 1001 | 1000;	8| 8|3158	6.09809592 6 | 6.09811370 6	2.5-11| 8.8-7| 0 | 9.9-7| 3.7-9| 2.6-7| -1.5-6	24:00
segment-large.7 | 1001 | 1000;	8| 8|3613	5.38598768 6 | 5.38600754 6	3.9-11| 9.9-7| 0 | 9.9-7| 6.4-9| 2.9-7| -1.8-6	28:07
segment-large.8 | 1001 | 1000;	8| 8|2950	4.78847595 6 | 4.78848661 6	2.7-11| 9.0-7| 1.2-9| 9.9-7| 3.9-9| 2.3-7| -1.1-6	23:46
segment-large.9 | 1001 | 1000;	8| 8|2452	4.28847495 6 | 4.28849222 6	2.6-11| 9.9-7| 2.4-10| 9.5-7| 8.5-10| 1.4-7| -2.0-6	19:23
segment-large.10 | 1001 | 1000;	8| 8|1871	3.86492330 6 | 3.86492553 6	4.3-11| 9.9-7| 3.4-9| 9.7-7| 1.3-8| 8.0-9| -2.9-7	14:38
segment-large.11 | 1001 | 1000;	8| 8|1887	3.50360361 6 | 3.50361681 6	5.1-11| 6.7-7| 0 | 9.9-7| 8.9-8| 2.7-7| -1.9-6	20:26
housing.2 | 507 | 506;	8| 8|3373	5.76086706 6 | 5.76093491 6	9.9-7| 9.9-7| 1.4-15| 8.7-8| 3.2-15| 3.8-8| -5.9-6	4:50
housing.3 | 507 | 506;	8| 8|1576	3.00980144 6 | 3.00979147 6	4.5-12| 8.6-7| 0 | 7.0-8| 9.7-7| 1.2-7| 1.7-6	3:20
housing.4 | 507 | 506;	8| 8|1645	1.79283384 6 | 1.79284813 6	7.5-12| 9.9-7| 2.8-8| 2.3-8| 8.3-8| 8.5-9| -4.0-6	2:50
housing.5 | 507 | 506;	8| 8|1918	1.38028143 6 | 1.38019123 6	7.4-12| 9.9-7| 0 | 7.5-8| 9.5-7| 1.6-7| 3.3-5	3:30
housing.6 | 507 | 506;	11| 11|533	1.11181933 6 | 1.11182191 6	6.5-13| 9.9-7| 4.4-7| 9.6-7| 8.2-7| 1.8-7| -1.2-6	1:06
housing.7 | 507 | 506;	8| 8|703	9.52730443 5 | 9.52783974 5	1.5-11| 9.9-7| 0 | 6.6-7| 6.7-7| 3.2-7| -2.8-5	1:29
housing.8 | 507 | 506;	0| 0|638	8.32092766 5 | 8.32124769 5	4.9-11| 9.1-7| 2.7-7| 9.8-7| 9.3-7| 1.6-7| -1.9-5	1:06
housing.9 | 507 | 506;	0| 0|794	7.41543509 5 | 7.41598866 5	5.9-11| 9.5-7| 0 | 1.6-7| 6.5-7| 2.2-7| -3.7-5	1:27

Table 2: Performance of SDPNAL+ on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
housing.10 | 507 | 506;	8| 8|927	6.72000062 5 | 6.72060390 5	4.7-11| 8.9-7| 3.1-8| 9.9-7| 1.1-7| 7.1-8| -4.5-5	1:38
housing.11 | 507 | 506;	8| 8|813	6.12669296 5 | 6.12699861 5	9.9-12| 9.9-7| 2.1-7| 9.9-7| 7.6-7| 2.6-7| -2.5-5	1:31

Table 3: Performance of SDPNAL+ on θ and R1TA problems ($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
theta4 | 1949 | 200;	13| 13|153	5.03212171 1 | 5.03212139 1	5.2-8| 6.5-7| 1.4-15| 0 | 1.0-15| 0 | 3.2-8	04
theta42 | 5986 | 200;	20| 20| 82	2.39317014 1 | 2.39317083 1	2.5-7| 6.0-7| 1.1-15| 0 | 6.7-16| 0 | -1.4-7	05
theta6 | 4375 | 300;	12| 12|163	6.34770795 1 | 6.34770774 1	3.7-8| 9.9-7| 3.4-16| 0 | 1.2-15| 0 | 1.6-8	09
theta62 | 13390 | 300;	13| 13| 82	2.96412360 1 | 2.96412502 1	3.5-7| 6.7-7| 2.0-16| 0 | 6.0-16| 0 | -2.4-7	07
theta8 | 7905 | 400;	12| 12|183	7.39535647 1 | 7.39535733 1	2.4-8| 4.4-7| 1.5-15| 0 | 0.8-15| 0 | -5.8-8	18
theta82 | 23872 | 400;	11| 11| 87	3.43668856 1 | 3.43668909 1	1.1-7| 4.5-7| 5.4-16| 0 | 1.5-16| 0 | -7.6-8	13
theta83 | 39862 | 400;	23| 23| 64	2.03018725 1 | 2.03018894 1	4.4-7| 9.8-7| 1.2-16| 0 | 6.7-16| 0 | -4.1-7	23
theta10 | 12470 | 500;	11| 11|200	8.38059601 1 | 8.38059488 1	4.4-8| 7.6-7| 6.5-16| 0 | 4.0-16| 0 | 6.7-8	32
theta102 | 37467 | 500;	11| 11| 84	3.83905392 1 | 3.83905464 1	8.1-8| 6.8-7| 3.4-16| 0 | 0.4-16| 0 | -9.3-8	21
theta103 | 62516 | 500;	20| 20| 64	2.25285667 1 | 2.25285686 1	2.8-7| 8.1-7| 1.8-16| 0 | 7.6-16| 0 | -4.1-8	38
theta104 | 87245 | 500;	43| 47| 63	1.33361259 1 | 1.33361411 1	3.9-7| 4.4-7| 1.3-16| 0 | 1.5-16| 0 | -5.5-7	53
theta12 | 17979 | 600;	13| 13|200	9.28016817 1 | 9.28016713 1	2.3-8| 3.7-7| 0.9-15| 0 | 1.3-16| 0 | 5.6-8	51
theta123 | 90020 | 600;	12| 12| 70	2.46686527 1 | 2.46686518 1	6.0-8| 7.1-7| 2.1-16| 0 | 1.1-16| 0 | 1.9-8	36
san200-0.7-1 | 5971 | 200;	11| 11|220	3.00000363 1 | 2.99998734 1	6.5-7| 7.7-7| 6.3-16| 0 | 1.7-15| 0 | 2.7-6	04
sanr200-0.7 | 6033 | 200;	14| 14| 82	2.38361576 1 | 2.38361571 1	1.5-7| 5.1-7| 1.1-15| 0 | 4.5-16| 0 | 9.4-9	03
c-fat200-1 | 18367 | 200;	25| 31| 90	1.20000005 1 | 1.20000152 1	2.6-7| 8.4-7| 1.1-15| 0 | 3.0-16| 0 | -5.9-7	04
hamming-8-4 | 11777 | 256;	5| 5| 72	1.60000000 1 | 1.60000026 1	1.4-11| 1.4-7| 0.5-16| 0 | 0.5-16| 0 | -7.8-8	02
hamming-9-8 | 2305 | 512;	12| 12|200	2.24000000 2 | 2.24000041 2	1.1-9| 2.5-7| 7.1-16| 0 | 4.4-16| 0 | -9.2-8	21
hamming-10-2 | 23041 | 1024;	10| 10|200	1.02399926 2 | 1.02400047 2	1.2-8| 4.8-7| 1.3-16| 0 | 0.8-16| 0 | -5.9-7	2:54
hamming-7-5-6 | 1793 | 128;	5| 5|232	4.26666667 1 | 4.26666693 1	2.7-12| 7.7-8| 5.4-16| 0 | 1.9-16| 0 | -3.0-8	02
hamming-8-3-4 | 16129 | 256;	9| 9| 83	2.55999999 1 | 2.55999998 1	1.2-8| 3.9-7| 1.4-16| 0 | 0.9-16| 0 | 1.1-9	03
hamming-9-5-6 | 53761 | 512;	6| 6|200	8.53333333 1 | 8.53333618 1	3.4-14| 6.2-7| 5.9-16| 0 | 0.2-16| 0 | -1.7-7	20
brock200-1 | 5067 | 200;	14| 14| 91	2.74566395 1 | 2.74566399 1	8.1-8| 3.3-7| 4.9-16| 0 | 0.8-15| 0 | -8.0-9	03
brock200-4 | 6812 | 200;	14| 14| 76	2.12934751 1 | 2.12934754 1	2.8-7| 9.8-7| 6.7-16| 0 | 2.8-16| 0 | -6.4-9	03
brock400-1 | 20078 | 400;	13| 13| 90	3.97018938 1 | 3.97019003 1	6.9-8| 2.5-7| 2.6-16| 0 | 7.2-16| 0 | -8.0-8	13
keller4 | 5101 | 171;	13| 13| 68	1.40122434 1 | 1.40122412 1	4.6-7| 2.8-7| 6.7-16| 0 | 5.0-16| 0 | 7.8-8	02
p-hat300-1 | 33918 | 300;	86|128| 69	1.00679724 1 | 1.00679649 1	4.4-7| 6.0-7| 1.4-16| 0 | 1.2-16| 0 | 3.5-7	58
G43 | 9991 | 1000;	27| 27|200	2.80625087 2 | 2.80624586 2	6.8-7| 9.8-7| 1.6-15| 0 | 1.6-14| 0 | 8.9-7	3:32
G44 | 9991 | 1000;	30| 30|200	2.80583223 2 | 2.80583220 2	1.1-7| 6.1-7| 2.5-15| 0 | 0.8-16| 0 | 5.9-9	3:48
G45 | 9991 | 1000;	26| 26|200	2.80185148 2 | 2.80185127 2	1.3-7| 6.4-7| 3.2-15| 0 | 2.4-15| 0 | 3.8-8	3:31
G46 | 9991 | 1000;	28| 30|200	2.79837009 2 | 2.79836974 2	1.9-7| 7.9-7| 5.7-15| 0 | 5.4-15| 0 | 6.2-8	3:49
G47 | 9991 | 1000;	30| 31|200	2.81894037 2 | 2.81893954 2	1.8-7| 3.7-7| 1.4-14| 0 | 1.4-14| 0 | 1.5-7	3:52
G51 | 5910 | 1000;	148|584|200	3.48999920 2 | 3.48999975 2	7.3-7| 5.9-7| 9.2-14| 0 | 4.6-14| 0 | -7.9-8	41:06
G52 | 5917 | 1000;	458|1619|200	3.48387855 2 | 3.48386488 2	7.6-7| 9.3-7| 3.0-15| 0 | 2.4-14| 0 | 2.0-6	3:53:19
G53 | 5915 | 1000;	425|1183|200	3.48348615 2 | 3.48347655 2	4.7-7| 9.9-7| 8.9-14| 0 | 3.2-15| 0 | 1.4-6	2:16:35
G54 | 5917 | 1000;	123|462|200	3.41000018 2 | 3.40999990 2	2.5-7| 9.3-7| 9.3-15| 0 | 5.7-16| 0 | 4.2-8	23:17
1dc.128 | 1472 | 128;	111|186|231	1.68419262 1 | 1.68418832 1	6.8-7| 9.8-7| 3.5-15| 0 | 1.2-16| 0 | 1.2-6	19
1et.128 | 673 | 128;	13| 13|140	2.92308538 1 | 2.92308946 1	1.6-7| 5.5-7| 1.5-15| 0 | 0.8-15| 0 | -6.9-7	02
1tc.128 | 513 | 128;	11| 11|205	3.80000058 1 | 3.80000001 1	6.2-8| 1.9-7| 2.2-15| 0 | 8.2-15| 0 | 7.5-8	02
1zc.128 | 1121 | 128;	12| 12|103	2.06666665 1 | 2.06666569 1	3.8-8| 4.1-7| 6.8-16| 0 | 3.8-16| 0 | 2.3-7	02
1dc.256 | 3840 | 256;	60| 83|220	2.99999998 1 | 3.00000002 1	3.3-9| 7.3-9| 1.7-13| 0 | 2.9-14| 0 | -7.1-9	20
1et.256 | 1665 | 256;	44| 66|220	5.51143466 1 | 5.51142200 1	5.7-7| 7.5-7| 7.5-15| 0 | 6.5-15| 0 | 1.1-6	23
1tc.256 | 1313 | 256;	81|169|220	6.33998218 1 | 6.33998835 1	3.4-7| 9.6-7| 7.3-16| 0 | 3.3-15| 0 | -4.8-7	1:02
1zc.256 | 2817 | 256;	17| 17|135	3.80000018 1 | 3.80000000 1	8.0-8| 5.4-7| 5.6-15| 0 | 2.6-15| 0 | 2.4-8	06
1dc.512 | 9728 | 512;	82|156|200	5.30309068 1 | 5.30307013 1	8.3-7| 6.5-7| 1.1-14| 0 | 0.9-15| 0 | 1.9-6	4:26
1et.512 | 4033 | 512;	48| 73|200	1.04423672 2 | 1.04424037 2	8.1-7| 6.9-7| 1.1-14| 0 | 5.1-15| 0 | -1.7-6	1:42
1tc.512 | 3265 | 512;	85|238|200	1.13400651 2 | 1.13400199 2	9.3-7| 5.8-7| 7.3-15| 0 | 4.4-15| 0 | 2.0-6	10:29
2dc.512 | 54896 | 512;	114|322|200	1.17678219 1 | 1.17678221 1	2.3-7| 9.9-7| 7.4-16| 0 | 0.8-15| 0 | -7.2-9	19:54
1zc.512 | 6913 | 512;	15| 15|200	6.87499715 1 | 6.87499833 1	4.5-8| 4.2-7| 1.2-15| 0 | 2.6-16| 0 | -8.5-8	34
1dc.1024 | 24064 | 1024;	48| 74|200	9.59856502 1 | 9.59849891 1	9.1-7| 5.9-7| 5.5-14| 0 | 3.8-14| 0 | 3.4-6	14:32
1et.1024 | 9601 | 1024;	64|129|200	1.84226960 2 | 1.84226147 2	5.9-7| 3.3-7| 5.3-15| 0 | 6.1-14| 0 | 2.2-6	35:33
1tc.1024 | 7937 | 1024;	156|417|200	2.06304654 2 | 2.06304284 2	7.5-7| 6.2-7| 3.1-14| 0 | 7.5-16| 0 | 8.9-7	1:22:24
1zc.1024 | 16641 | 1024;	16| 16|200	1.28666672 2 | 1.28666665 2	1.8-8| 8.4-7| 0.8-15| 0 | 3.8-15| 0 | 2.7-8	4:56
2dc.1024 | 169163 | 1024;	148|376|200	1.86381938 1 | 1.86378972 1	8.2-7| 9.2-7| 1.1-14| 0 | 4.0-15| 0 | 7.8-6	2:21:20

Table 3: Performance of SDPNAL+ on θ and R1TA problems ($\varepsilon = 10^{-6}$)

problem | m | $n_s; n_l$	it|itsub|itA	*pobj* | *dobj*	η_P | η_D | $\eta_{\mathcal{K}_1}$ | $\eta_{\mathcal{K}_2}$ | η_{C1} | η_{C2} | η_g	time
1dc.2048 | 58368 | 2048;	62|112|200	1.74731330 2 | 1.74729390 2	9.7-7| 6.2-7| 5.3-14| 0 | 1.6-14| 0 | 5.5-6	1:55:31
1et.2048 | 22529 | 2048;	228|658|200	3.42031726 2 | 3.42029072 2	8.7-7| 8.0-7| 1.1-14| 0 | 4.8-15| 0 | 3.9-6	5:29:46
1tc.2048 | 18945 | 2048;	509|1725|200	3.74644012 2 | 3.74643271 2	4.7-7| 8.2-7| 1.6-14| 0 | 9.6-15| 0 | 9.9-7	22:10:45
2dc.2048 | 504452 | 2048;	167|385|200	3.06739144 1 | 3.06728102 1	9.8-7| 8.2-7| 3.2-15| 0 | 2.7-15| 0 | 1.8-5	14:22:06
nonsym(5,4) | 3374 | 125;	9| 9|250	3.06439166 0 | 3.06438526 0	6.5-7| 1.5-7| 1.3-16| 0 | 1.0-16| 0 | 9.0-7	02
nonsym(6,4) | 9260 | 216;	15| 15|220	3.07677509 0 | 3.07684938 0	7.3-7| 8.7-7| 0.8-16| 0 | 1.5-16| 0 | -1.0-5	05
nonsym(7,4) | 21951 | 343;	10| 10|200	5.07407692 0 | 5.07410714 0	7.9-8| 1.7-7| 0.4-16| 0 | 0.4-16| 0 | -2.7-6	11
nonsym(8,4) | 46655 | 512;	13| 13|200	5.74083101 0 | 5.74083615 0	1.5-7| 2.4-8| 0 | 0 | 1.0-16| 0 | -4.1-7	29
nonsym(9,4) | 91124 | 729;	25| 33|200	1.06613340 0 | 1.06611027 0	8.5-8| 4.2-7| 0 | 0 | 3.0-16| 0 | 7.4-6	2:00
nonsym(10,4) | 166374 | 1000;	17| 21|200	1.69471772 0 | 1.69472878 0	7.9-7| 1.6-7| 0.8-16| 0 | 0.5-16| 0 | -2.5-6	3:37
nonsym(11,4) | 287495 | 1331;	19| 22|200	2.91348466 0 | 2.91343357 0	7.5-8| 2.5-7| 0.2-16| 0 | 0.6-16| 0 | 7.5-6	7:14
nonsym(3,5) | 1295 | 81;	41| 46|133	1.01163219 0 | 1.01164570 0	3.2-7| 7.6-7| 0 | 0 | 2.8-16| 0 | -4.5-6	03
nonsym(4,5) | 9999 | 256;	24| 31|220	1.51740741 0 | 1.51743879 0	2.8-7| 6.7-7| 1.3-16| 0 | 0.4-16| 0 | -7.8-6	11
nonsym(5,5) | 50624 | 625;	30| 31|200	3.08257539 0 | 3.08254910 0	2.4-7| 1.7-7| 1.8-16| 0 | 1.3-16| 0 | 3.7-6	1:18
nonsym(6,5) | 194480 | 1296;	26| 28|200	3.09572024 0 | 3.09557416 0	6.4-7| 6.6-7| 0.8-16| 0 | 0.1-16| 0 | 2.0-5	6:39
sym_rd(3,20) | 10625 | 231;	22| 22| 61	1.52150093 0 | 1.52146500 0	2.5-7| 7.6-7| 0.5-16| 0 | 0.1-16| 0 | 8.9-6	06
sym_rd(3,25) | 23750 | 351;	20| 20| 72	1.62975155 0 | 1.62975642 0	4.7-7| 4.5-7| 0.3-16| 0 | 1.1-16| 0 | -1.1-6	11
sym_rd(3,30) | 46375 | 496;	15| 15| 77	1.82416348 0 | 1.82417998 0	4.1-7| 1.7-7| 0.2-16| 0 | 0.2-16| 0 | -3.6-6	23
sym_rd(3,35) | 82250 | 666;	43| 46| 72	1.82999132 0 | 1.83002862 0	5.4-7| 3.3-7| 0 | 0 | 0.8-16| 0 | -8.0-6	1:27
sym_rd(3,40) | 135750 | 861;	37| 39| 82	1.99315221 0 | 1.99323089 0	1.7-7| 5.7-7| 0.3-16| 0 | 1.0-16| 0 | -1.6-5	2:18
sym_rd(3,45) | 211875 | 1081;	31| 31| 87	2.14076548 0 | 2.14073540 0	5.5-7| 2.2-7| 0 | 0 | 1.1-16| 0 | 5.7-6	4:31
sym_rd(3,50) | 316250 | 1326;	37| 37| 87	2.06951100 0 | 2.06938546 0	5.1-7| 7.6-7| 0 | 0 | 0.1-16| 0 | 2.4-5	8:24
sym_rd(4,20) | 8854 | 210;	11| 11|214	8.60616358 0 | 8.60597144 0	5.6-7| 6.6-7| 0.8-16| 0 | 0.0-16| 0 | 1.1-5	05
sym_rd(4,25) | 20474 | 325;	35| 36| 83	8.56184837 0 | 8.56212636 0	1.2-7| 8.1-7| 0 | 0 | 0.2-16| 0 | -1.5-5	16
sym_rd(4,30) | 40919 | 465;	29| 29| 74	9.56029222 0 | 9.56055568 0	4.6-7| 6.8-7| 0 | 0 | 0.6-16| 0 | -1.3-5	44
sym_rd(4,35) | 73814 | 630;	46| 51| 77	1.09833279 1 | 1.09831864 1	6.3-8| 2.2-7| 0 | 0 | 0.7-16| 0 | 6.2-6	1:45
sym_rd(4,40) | 123409 | 820;	60| 76| 86	1.15471518 1 | 1.15473381 1	5.4-8| 6.6-7| 1.6-13| 0 | 3.2-16| 0 | -7.7-6	4:56
sym_rd(4,45) | 194579 | 1035;	45| 62| 90	1.18424653 1 | 1.18425819 1	5.7-8| 3.5-7| 1.0-13| 0 | 1.3-16| 0 | -4.7-6	7:44
sym_rd(4,50) | 292824 | 1275;	45| 62| 91	1.30418148 1 | 1.30421731 1	6.8-8| 7.9-7| 1.0-15| 0 | 1.4-16| 0 | -1.3-5	12:44
sym_rd(5,5) | 461 | 56;	8| 8| 59	1.95250518 0 | 1.95247488 0	4.6-7| 9.5-7| 0 | 0 | 2.2-16| 0 | 6.2-6	01
sym_rd(5,10) | 8007 | 286;	22| 22| 59	2.98125399 0 | 2.98114212 0	4.0-7| 7.7-7| 0.1-16| 0 | 4.9-16| 0 | 1.6-5	07
sym_rd(5,15) | 54263 | 816;	41| 43|111	3.49345457 0 | 3.49338911 0	5.3-8| 2.4-7| 0 | 0 | 0.3-16| 0 | 8.2-6	2:53
sym_rd(5,20) | 230229 | 1771;	29| 35|139	4.17928037 0 | 4.17942269 0	3.1-7| 2.9-7| 0 | 0 | 0.8-16| 0 | -1.5-5	27:28
sym_rd(6,5) | 209 | 35;	9| 9| 51	1.31674208 1 | 1.31674075 1	3.6-7| 3.5-7| 0 | 0 | 1.9-16| 0 | 4.9-7	01
sym_rd(6,10) | 5004 | 220;	21| 21| 57	2.27372641 1 | 2.27380428 1	1.9-7| 6.2-7| 0.0-16| 0 | 3.1-16| 0 | -1.7-5	04
sym_rd(6,15) | 38759 | 680;	32| 35|137	2.70987911 1 | 2.70973348 1	4.7-7| 6.4-7| 0 | 0 | 1.2-16| 0 | 2.6-5	1:33
sym_rd(6,20) | 177099 | 1540;	26| 37|185	3.15086704 1 | 3.15084788 1	6.4-7| 4.2-7| 5.3-16| 0 | 1.2-16| 0 | 3.0-6	22:48
nsym_rd([10,10,10]) | 3024 | 100;	9| 9|250	2.44205446 0 | 2.44203438 0	5.6-7| 4.0-7| 0 | 0 | 0.2-16| 0 | 3.4-6	02
nsym_rd([15,15,15]) | 14399 | 225;	9| 9| 64	2.48378784 0 | 2.48373174 0	9.9-7| 9.7-7| 0.7-16| 0 | 0.5-16| 0 | 9.4-6	03
nsym_rd([20,20,20]) | 44099 | 400;	14| 14|200	3.47772119 0 | 3.47780114 0	5.3-7| 7.3-7| 0 | 0 | 1.1-16| 0 | -1.0-5	18
nsym_rd([20,25,25]) | 68249 | 500;	47| 51| 66	2.78568871 0 | 2.78562272 0	2.4-7| 6.0-7| 0 | 0 | 2.0-16| 0 | 1.0-5	58
nsym_rd([25,20,25]) | 68249 | 500;	49| 50| 77	2.77557008 0 | 2.77563681 0	8.4-8| 7.0-7| 0.3-16| 0 | 3.8-16| 0 | -1.0-5	58
nsym_rd([25,25,20]) | 68249 | 500;	14| 14|129	2.87657149 0 | 2.87658217 0	8.8-8| 9.0-8| 0 | 0 | 1.4-16| 0 | -1.6-6	34
nsym_rd([25,25,25]) | 105624 | 625;	56| 64| 95	2.83000532 0 | 2.83011896 0	1.5-7| 9.0-7| 0 | 0 | 1.7-16| 0 | -1.7-5	1:33
nsym_rd([30,30,30]) | 216224 | 900;	30| 33|122	3.03772558 0 | 3.03770676 0	6.2-7| 4.6-7| 0.3-16| 0 | 0.0-16| 0 | 2.7-6	3:52
nsym_rd([35,35,35]) | 396899 | 1225;	45| 49|141	3.07047975 0 | 3.07050501 0	1.4-7| 2.0-7| 0 | 0 | 1.4-16| 0 | -3.5-6	9:14
nsym_rd([40,40,40]) | 672399 | 1600;	33| 35| 93	3.87873078 0 | 3.87863899 0	2.1-7| 3.3-7| 0.2-16| 0 | 0.1-16| 0 | 1.0-5	14:23
nsym_rd([5,5,5,5]) | 3374 | 125;	10| 10|128	1.89465077 0 | 1.89464303 0	1.4-7| 1.8-7| 0 | 0 | 2.0-16| 0 | 1.6-6	02
nsym_rd([6,6,6,6]) | 9260 | 216;	10| 10|132	2.68232681 0 | 2.68236807 0	2.1-7| 5.9-7| 0.1-16| 0 | 0.5-16| 0 | -6.5-6	04
nsym_rd([7,7,7,7]) | 21951 | 343;	10| 10|200	3.33236931 0 | 3.33240403 0	1.5-7| 2.8-7| 2.3-16| 0 | 2.7-16| 0 | -4.5-6	11
nsym_rd([8,8,8,8]) | 46655 | 512;	11| 11|200	2.83768958 0 | 2.83773386 0	1.0-7| 3.3-7| 0 | 0 | 1.0-16| 0 | -6.6-6	28
nsym_rd([9,9,9,9]) | 91124 | 729;	14| 14|200	3.10895856 0 | 3.10890841 0	3.1-7| 2.6-7| 2.6-16| 0 | 2.0-16| 0 | 6.9-6	1:07
nonsym(12,4) | 474551 | 1728;	5| 17|200	5.92161950 0 | 5.92162092 0	2.8-8| 4.5-9| 0.1-16| 0 | 0.2-16| 0 | -1.1-7	16:55
nonsym(13,4) | 753570 | 2197;	15| 55|200	7.27450656 0 | 7.27450942 0	5.2-7| 5.6-9| 1.0-16| 0 | 0.8-16| 0 | -1.8-7	1:51:34
nonsym(7,5) | 614655 | 2401;	32| 43|200	5.10582689 0 | 5.10572890 0	2.4-7| 2.0-7| 0 | 0 | 2.7-16| 0 | 8.7-6	53:29
nonsym(8,5) | 1679615 | 4096;	14| 22|200	5.77855140 0 | 5.77862086 0	5.2-7| 1.0-7| 0 | 0 | 4.8-16| 0 | -5.5-6	2:46:20
nonsym(18,4) | 5000210 | 5832;	13| 55|200	1.53963123 1 | 1.53954727 1	5.8-7| 3.7-7| 0 | 0 | 1.6-16| 0 | 2.6-5	8:50:14
nonsym(20,4) | 9260999 | 8000;	7| 17|200	1.77231047 1 | 1.77233375 1	5.2-8| 7.4-8| 0 | 0 | 2.2-15| 0 | -6.4-6	8:26:40
nonsym(21,4) | 12326390 | 9261;	7| 21|200	2.03462783 1 | 2.03463278 1	5.7-8| 1.3-8| 2.9-15| 0 | 2.9-15| 0 | -1.2-6	14:22:05

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
theta4 | 1949 | 200;	0, 0;304 | 304 | 307 | 701	9.6-7 | 9.6-7 | 9.9-7 | 9.9-7	-1.4-6 | -1.4-6 | 3.0-7 | 1.5-6	06 | 06 | 05 | 13
theta42 | 5986 | 200;	0, 0;179 | 179 | 151 | 345	9.6-7 | 9.6-7 | 9.6-7 | 9.8-7	8.3-8 | 8.3-8 | 3.3-7 | 9.5-7	03 | 03 | 03 | 06
theta6 | 4375 | 300;	0, 0;316 | 316 | 318 | 671	8.5-7 | 8.5-7 | 9.8-7 | 9.9-7	-2.0-6 | -2.0-6 | -1.2-6 | 1.4-6	13 | 13 | 12 | 31
theta62 | 13390 | 300;	0, 0;178 | 178 | 129 | 336	9.5-7 | 9.5-7 | 8.9-7 | 9.9-7	-1.1-7 | -1.1-7 | 1.3-6 | 1.4-6	08 | 08 | 07 | 15
theta8 | 7905 | 400;	0, 0;316 | 316 | 325 | 470	9.7-7 | 9.7-7 | 8.6-7 | 9.8-7	-2.5-6 | -2.5-6 | 1.7-6 | 1.2-6	24 | 24 | 24 | 40
theta82 | 23872 | 400;	0, 0;157 | 157 | 130 | 343	9.7-7 | 9.7-7 | 8.4-7 | 9.7-7	-2.3-7 | -2.3-7 | 1.8-6 | 1.8-6	13 | 13 | 13 | 30
theta83 | 39862 | 400;	0, 0;154 | 154 | 111 | 306	9.5-7 | 9.5-7 | 9.9-7 | 9.9-7	-1.0-7 | -1.0-7 | 6.0-7 | 2.4-6	14 | 14 | 13 | 28
theta10 | 12470 | 500;	0, 0;354 | 354 | 351 | 490	8.5-7 | 8.5-7 | 9.9-7 | 9.9-7	-2.5-6 | -2.5-6 | -7.8-7 | 1.5-6	46 | 45 | 42 | 1:11
theta102 | 37467 | 500;	0, 0;157 | 157 | 130 | 355	9.5-7 | 9.5-7 | 9.0-7 | 9.9-7	-6.0-7 | -6.0-7 | 2.1-6 | 2.2-6	23 | 23 | 23 | 54
theta103 | 62516 | 500;	0, 0;144 | 144 | 108 | 323	9.2-7 | 9.2-7 | 9.8-7 | 9.8-7	-3.0-8 | -3.0-8 | 5.9-7 | 2.6-6	22 | 22 | 21 | 49
theta104 | 87245 | 500;	0, 0;169 | 169 | 123 | 338	9.3-7 | 9.3-7 | 9.8-7 | 9.9-7	-9.2-8 | -9.2-8 | 1.1-6 | 3.2-6	24 | 24 | 20 | 51
theta12 | 17979 | 600;	0, 0;362 | 362 | 366 | 494	9.0-7 | 9.0-7 | 8.8-7 | 9.2-7	-2.2-6 | -2.2-6 | 1.0-6 | 1.3-6	1:15 | 1:14 | 1:11 | 1:52
theta123 | 90020 | 600;	0, 0;156 | 156 | 107 | 345	9.3-7 | 9.3-7 | 9.9-7 | 9.9-7	-6.0-8 | -6.0-8 | 5.1-7 | 2.6-6	34 | 35 | 33 | 1:26
san200-0.7-1 | 5971 | 200;	4, 4;500 | 1924 | 5566 | 139	3.5-10 | 9.8-7 | 9.6-7 | 9.5-7	-2.7-10 | -1.1-5 | -4.0-6 | -1.6-6	07 | 17 | 47 | 02
sanr200-0.7 | 6033 | 200;	0, 0;187 | 187 | 158 | 320	9.4-7 | 9.4-7 | 9.2-7 | 9.7-7	-1.4-7 | -1.4-7 | 3.5-8 | 1.1-6	03 | 03 | 04 | 06
c-fat200-1 | 18367 | 200;	0, 0;233 | 233 | 444 | 330	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	-6.9-7 | -6.9-7 | -1.2-6 | 2.1-6	03 | 03 | 06 | 04
hamming-8-4 | 11777 | 256;	0, 0;124 | 124 | 104 | 214	4.7-7 | 4.7-7 | 9.6-7 | 8.9-7	-5.3-6 | -5.3-6 | 2.1-6 | 1.0-5	02 | 02 | 03 | 04
hamming-9-8 | 2305 | 512;	11,11;500 | 2413 | 3100 | 938	9.5-7 | 9.6-7 | 9.6-7 | 9.0-7	-4.4-8 | -1.2-5 | -6.9-7 | 5.6-6	44 | 3:07 | 4:20 | 1:36
hamming-10-2 | 23041 | 1024;	0, 0;657 | 657 | 651 | 902	8.7-7 | 8.7-7 | 9.4-7 | 8.8-7	7.6-6 | 7.6-6 | -2.6-6 | 3.4-5	3:09 | 3:05 | 5:17 | 3:47
hamming-7-5-6 | 1793 | 128;	0, 0;510 | 510 | 603 | 659	8.7-7 | 8.7-7 | 8.6-7 | 9.1-7	-8.4-6 | -8.4-6 | 9.2-7 | 1.8-6	04 | 04 | 05 | 04
hamming-8-3-4 | 16129 | 256;	0, 0;232 | 232 | 189 | 180	7.8-7 | 7.8-7 | 5.5-7 | 9.0-7	2.0-7 | 2.0-7 | 9.9-7 | -3.5-6	06 | 06 | 04 | 03
hamming-9-5-6 | 53761 | 512;	0, 0;461 | 461 | 507 | 563	9.5-7 | 9.5-7 | 9.5-7 | 8.9-7	-1.2-5 | -1.2-5 | -1.9-6 | 8.0-6	45 | 45 | 54 | 58
brock200-1 | 5067 | 200;	0, 0;182 | 182 | 159 | 334	9.6-7 | 9.6-7 | 9.5-7 | 9.7-7	-6.6-8 | -6.6-8 | 2.4-9 | 1.1-6	04 | 04 | 03 | 06
brock200-4 | 6812 | 200;	0, 0;172 | 172 | 138 | 297	9.2-7 | 9.2-7 | 9.7-7 | 9.9-7	-1.1-7 | -1.1-7 | 7.2-8 | 1.5-6	04 | 04 | 03 | 06
brock400-1 | 20078 | 400;	0, 0;171 | 171 | 155 | 354	8.9-7 | 8.9-7 | 9.9-7 | 9.7-7	-1.6-6 | -1.6-6 | 1.6-6 | 1.7-6	14 | 14 | 14 | 31
keller4 | 5101 | 171;	0, 0;317 | 317 | 526 | 634	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.2-8 | -3.2-8 | -6.2-7 | 1.5-6	03 | 04 | 08 | 07
p-hat300-1 | 33918 | 300;	0, 0;649 | 649 | 791 | 759	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.3-7 | -1.3-7 | 1.3-6 | 1.8-6	26 | 26 | 35 | 33
G43 | 9991 | 1000;	21,21;973 | 1154 | 1147 | 934	8.9-7 | 9.8-7 | 9.4-7 | 9.9-7	4.1-6 | -3.1-6 | 1.7-6 | 2.0-6	12:32 | 13:04 | 10:20 | 13:00
G44 | 9991 | 1000;	21,21;942 | 1151 | 1144 | 968	9.9-7 | 9.3-7 | 9.9-7 | 9.9-7	-5.1-6 | -2.9-6 | 1.6-6 | 1.6-6	12:00 | 12:13 | 10:11 | 13:15
G45 | 9991 | 1000;	21,21;888 | 1175 | 1185 | 966	9.8-7 | 9.5-7 | 9.4-7 | 9.9-7	-6.5-6 | 2.9-6 | -1.0-6 | 1.6-6	11:43 | 13:24 | 10:36 | 13:28
G46 | 9991 | 1000;	21,21;887 | 1199 | 1180 | 943	9.7-7 | 9.9-7 | 9.8-7 | 9.9-7	-1.1-5 | -3.2-6 | -1.0-6 | 1.4-6	11:35 | 12:55 | 10:42 | 12:58
G47 | 9991 | 1000;	21,21;1042 | 1186 | 1137 | 992	9.4-7 | 9.5-7 | 9.5-7 | 9.9-7	-5.4-6 | 2.9-6 | -9.4-7 | 1.2-6	13:10 | 13:18 | 10:28 | 13:50
G51 | 5910 | 1000;	1, 2;5672 | 6207 | 10361 | 9586	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.0-6 | 3.7-7 | 2.6-7 | 5.6-7	1:15:12 | 1:21:52 | 2:11:03 | 2:31:30
G52 | 5917 | 1000;	5, 5;10840 | 11463 | 14163 | 12124	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.4-7 | 4.2-7 | 4.5-7 | 6.9-7	2:21:46 | 2:26:28 | 2:46:25 | 3:15:11
G53 | 5915 | 1000;	4, 4;13260 | 13289 | 23865 | 20623	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.9-6 | 2.6-6 | 2.9-6 | 4.2-6	2:48:21 | 2:49:53 | 4:48:56 | 5:49:06
G54 | 5917 | 1000;	8, 8;4278 | 3262 | 7542 | 5136	9.9-7 | 9.7-7 | 9.9-7 | 9.9-7	-7.9-7 | 3.1-6 | 4.6-7 | 1.3-6	51:18 | 38:42 | 1:26:47 | 1:17:01
1dc.128 | 1472 | 128;	28,31;1575 | 2260 | 1431 | 1046	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	1.6-7 | 2.8-6 | 1.9-6 | 4.1-6	13 | 16 | 14 | 07
1et.128 | 673 | 128;	0, 0;313 | 313 | 370 | 478	9.6-7 | 9.6-7 | 9.8-7 | 9.7-7	2.7-6 | 2.7-6 | -3.3-7 | 1.5-6	02 | 02 | 03 | 03
1tc.128 | 513 | 128;	4, 4;700 | 756 | 1116 | 233	7.6-7 | 8.1-7 | 9.9-7 | 9.6-7	2.9-7 | 5.1-6 | -3.5-8 | 1.6-6	04 | 04 | 05 | 01
1zc.128 | 1121 | 128;	0, 0;164 | 164 | 191 | 301	9.4-7 | 9.4-7 | 9.8-7 | 8.6-7	-4.8-6 | -4.8-6 | 1.4-6 | 5.9-6	01 | 01 | 02 | 02
1dc.256 | 3840 | 256;	2, 2;1000 | 2399 | 8744 | 376	9.7-7 | 9.5-7 | 9.9-7 | 9.4-7	-2.3-6 | -1.8-5 | 5.1-6 | -7.0-7	25 | 44 | 2:12 | 10
1et.256 | 1665 | 256;	0, 0;893 | 893 | 1421 | 25000	9.9-7 | 9.9-7 | 9.9-7 | **2.5-3**	-2.7-7 | -2.7-7 | 1.0-6 | **-1.2-3**	23 | 22 | 37 | 13:38
1tc.256 | 1313 | 256;	0, 0;1335 | 1335 | 1979 | 3075	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.2-7 | 4.2-7 | 1.4-6 | 1.7-6	38 | 37 | 55 | 1:20

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
1zc.256 | 2817 | 256;	0, 0;237 | 237 | 238 | 326	6.1-7 | 6.1-7 | 8.6-7 | 9.9-7	-4.9-6 | -4.9-6 | -1.3-6 | 5.6-6	05 | 06 | 07 | 07
1dc.512 | 9728 | 512;	0, 0;2216 | 2216 | 2269 | 2634	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.1-7 | 4.1-7 | 2.2-6 | 3.3-6	5:05 | 5:03 | 7:01 | 6:14
1et.512 | 4033 | 512;	0, 0;990 | 990 | 1470 | 1530	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.1-7 | -1.1-7 | 3.9-6 | 5.6-6	1:57 | 1:58 | 3:15 | 3:08
1tc.512 | 3265 | 512;	0, 0;2494 | 2494 | 3340 | 3807	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.4-7 | 9.4-7 | 2.5-6 | 3.3-6	4:57 | 5:04 | 10:15 | 9:03
2dc.512 | 54896 | 512;	0, 0;2956 | 2956 | 2701 | 2173	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	8.5-6 | 8.5-6 | 7.5-6 | 1.6-5	5:34 | 5:34 | 6:36 | 4:45
1zc.512 | 6913 | 512;	0, 0;490 | 490 | 1056 | 2120	8.5-7 | 8.5-7 | 9.9-7 | 9.9-7	4.7-6 | 4.7-6 | 2.2-7 | 3.0-7	53 | 54 | 3:08 | 4:16
1dc.1024 | 24064 | 1024;	0, 0;2620 | 2620 | 2681 | 3641	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-6 | 1.3-6 | 3.4-6 | 4.0-6	31:46 | 32:22 | 45:21 | 53:12
1et.1024 | 9601 | 1024;	0, 0;1144 | 1144 | 2563 | 2609	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-6 | 1.3-6 | 5.6-6 | 5.9-6	12:43 | 12:54 | 39:53 | 35:35
1tc.1024 | 7937 | 1024;	0, 0;2732 | 2732 | 6545 | 6675	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.5-6 | 4.5-6 | 4.5-6 | 4.2-6	31:34 | 32:08 | 1:48:31 | 1:40:06
1zc.1024 | 16641 | 1024;	0, 0;711 | 711 | 770 | 25000	7.7-7 | 7.7-7 | 9.9-7 | 3.1-5	5.4-6 | 5.4-6 | 2.0-6 | **7.9-4**	7:12 | 7:19 | 12:18 | 7:48:20
2dc.1024 | 169163 | 1024;	0, 0;4135 | 4135 | 1896 | 1891	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-5 | 1.3-5 | 1.0-5 | 1.5-5	44:55 | 45:59 | 29:02 | 24:59
1dc.2048 | 58368 | 2048;	0, 0;4153 | 4153 | 7277 | 8476	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.2-6 | 4.2-6 | 6.4-6 | 6.5-6	5:50:06 | 5:47:45 | 13:59:49 | 16:04:13
1et.2048 | 22529 | 2048;	0, 0;3039 | 3039 | 4422 | 4739	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | 1.1-6 | 4.8-6 | 7.8-6	4:01:54 | 4:04:34 | 8:47:18 | 8:28:46
1tc.2048 | 18945 | 2048;	0, 0;2876 | 2876 | 7329 | 7482	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.5-6 | 1.5-6 | 5.5-6 | 5.6-6	3:50:43 | 3:50:16 | 13:29:15 | 13:50:32
2dc.2048 | 504452 | 2048;	0, 0;2997 | 2997 | 2147 | 1849	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	8.3-6 | 8.3-6 | 1.0-5 | 2.2-5	3:54:58 | 3:52:42 | 4:13:47 | 3:07:46
fap08 | 120 | 120;	1, 1;368 | 420 | 725 | 976	9.8-7 | 9.9-7 | 9.9-7 | 9.4-7	-1.7-6 | -1.5-6 | -2.6-6 | -3.5-6	03 | 03 | 05 | 06
fap09 | 174 | 174;	1, 1;426 | 419 | 464 | 728	9.8-7 | 9.7-7 | 9.9-7 | 9.9-7	1.2-6 | 1.2-6 | 1.0-6 | -5.1-8	05 | 05 | 04 | 07
fap10 | 183 | 183;	3, 3;993 | 1424 | 2313 | 2774	8.8-7 | 6.0-7 | 9.9-7 | 9.9-7	-2.5-5 | 3.7-6 | **-1.3-4** | -6.8-5	18 | 25 | 27 | 42
fap11 | 252 | 252;	5, 5;1180 | 1559 | 2585 | 2771	9.6-7 | 5.3-7 | 9.9-7 | 9.7-7	-6.8-5 | -1.9-5 | **-2.2-4** | **-1.1-4**	39 | 50 | 1:07 | 1:18
fap12 | 369 | 369;	15,15;1768 | 1830 | 3394 | 3325	9.9-7 | 8.4-7 | 9.9-7 | 9.9-7	-6.6-5 | -2.6-5 | **-2.2-4** | **-1.3-4**	1:56 | 1:55 | 3:32 | 3:08
fap25 | 2118 | 2118;	11,11;2268 | 5799 | 5495 | 4498	9.2-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.2-5 | -3.2-5 | **-1.1-4** | -7.1-5	3:58:21 | 10:55:33 | 13:26:47 | 8:11:50
fap36 | 4110 | 4110;	4, 4;2033 | 2824 | 4445 | 3500	9.5-7 | 9.9-7 | 9.9-7 | 9.8-7	-2.5-5 | -1.7-5 | -3.0-5 | -2.8-5	23:07:56 | 30:57:53 | 78:43:03 | 43:37:44
bur26a | 1051 | 676;	137,222;10228 | 25000 | 25000 | 25000	9.9-7 | 5.6-6 | 1.1-5 | 8.9-6	-1.8-5 | -6.3-5 | -7.7-5 | -8.2-5	1:48:05 | 2:05:11 | 2:07:44 | 2:38:24
bur26b | 1051 | 676;	100,208;8605 | 25000 | 25000 | 25000	9.9-7 | 6.8-6 | 1.1-5 | 9.3-6	-1.8-5 | -5.7-5 | -8.0-5 | -7.5-5	1:32:52 | 2:07:13 | 1:57:30 | 2:49:59
bur26c | 1051 | 676;	247,441;21498 | 25000 | 25000 | 25000	9.9-7 | 4.2-6 | 1.4-5 | 1.4-5	-2.0-5 | -4.5-5 | **-1.2-4** | **-1.8-4**	2:03:12 | 2:05:11 | 2:02:35 | 2:50:08
bur26d | 1051 | 676;	173,306;13287 | 25000 | 25000 | 25000	9.9-7 | 6.4-6 | 1.5-5 | 1.3-5	-1.3-5 | -8.4-5 | **-1.2-4** | **-1.4-4**	1:59:20 | 2:02:24 | 1:51:20 | 2:53:07
bur26e | 1051 | 676;	129,361;14705 | 25000 | 25000 | 25000	9.4-7 | 3.1-6 | 6.4-6 | 1.4-5	-1.1-5 | -2.8-5 | -3.6-5 | **-1.9-4**	1:18:35 | 2:03:18 | 2:28:06 | 2:46:03
bur26f | 1051 | 676;	107,248;11272 | 20887 | 25000 | 25000	9.9-7 | 9.9-7 | 8.1-6 | 1.2-5	-1.0-5 | -1.0-5 | -4.8-5 | -7.5-5	1:45:13 | 1:45:08 | 2:09:11 | 2:44:28
bur26g | 1051 | 676;	250,392;10817 | 17910 | 25000 | 25000	9.9-7 | 8.6-7 | 1.6-6 | 7.8-6	-2.4-5 | -6.3-6 | -4.0-5 | -6.9-5	1:32:44 | 1:29:22 | 1:57:13 | 2:46:34
bur26h | 1051 | 676;	146,360;10658 | 23208 | 25000 | 25000	9.9-7 | 9.4-7 | 1.4-6 | 2.3-5	1.9-5 | -1.4-6 | -2.3-5 | **-1.7-4**	1:25:45 | 1:57:33 | 2:01:12 | 2:54:20
chr12a | 232 | 144;	185,246;1150 | 3645 | 6509 | 25000	4.4-7 | 9.1-7 | 9.1-7 | 2.4-6	5.7-10 | -8.7-5 | **1.8-4** | **-2.6-4**	25 | 25 | 40 | 6:21
chr12b | 232 | 144;	141,150;1333 | 2833 | 4552 | 20981	9.3-7 | 9.4-7 | 9.6-7 | 9.5-7	6.0-7 | **2.4-4** | **-1.9-4** | **2.0-4**	19 | 18 | 26 | 5:19
chr12c | 232 | 144;	70,213;5547 | 25000 | 25000 | 25000	5.9-7 | 4.9-6 | 5.9-6 | 4.5-6	9.0-5 | **-4.4-4** | **-2.2-4** | **-1.5-4**	1:10 | 3:30 | 4:27 | 6:20
chr15a | 358 | 225;	215,394;14122 | 25000 | 25000 | 25000	6.9-7 | 7.9-6 | 1.4-5 | 3.0-5	**3.2-4** | **-1.9-3** | **-1.6-3** | **-4.5-3**	7:08 | 8:02 | 12:07 | 14:48
chr15b | 358 | 225;	34,92;2611 | 3621 | 12507 | 25000	7.4-7 | 8.6-7 | 9.9-7 | 2.1-5	**-1.5-4** | **6.2-4** | **4.4-4** | **-1.1-3**	58 | 1:10 | 4:40 | 14:26
chr15c | 358 | 225;	26,67;2020 | 2919 | 8994 | 25000	4.2-7 | 9.0-7 | 9.8-7 | 4.6-5	5.5-6 | **5.4-4** | **-3.5-4** | **-1.5-2**	46 | 58 | 3:36 | 14:27
chr18a | 511 | 324;	356,519;13265 | 25000 | 25000 | 25000	7.9-7 | 3.0-6 | 5.2-6 | 4.1-5	**4.7-4** | **-2.2-4** | **-2.3-4** | **-1.1-2**	12:50 | 17:44 | 25:29 | 30:47
chr18b | 511 | 324;	34,61;1658 | 1124 | 1176 | 8709	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-9.5-6 | -4.5-6 | -3.0-6 | -6.1-6	1:55 | 52 | 1:04 | 11:15
chr20a | 628 | 400;	241,445;10389 | 25000 | 25000 | 25000	8.7-7 | 2.0-6 | 2.2-6 | 3.1-5	**3.8-4** | **-2.4-4** | -8.9-5 | **-4.3-3**	18:17 | 29:49 | 43:13 | 49:22
chr20b | 628 | 400;	68,165;3940 | 8256 | 25000 | 25000	6.8-9 | 9.6-7 | 2.9-5 | 2.4-5	-2.0-6 | **5.2-4** | **-5.4-3** | **-4.0-3**	9:02 | 10:39 | 45:06 | 51:14
chr20c | 628 | 400;	386,764;10040 | 14673 | 25000 | 25000	8.1-7 | 9.1-7 | 1.4-6 | 3.4-5	**-1.0-4** | 5.2-6 | **-2.7-4** | **-1.1-2**	13:12 | 13:45 | 26:08 | 48:58
chr22a | 757 | 484;	104,250;6940 | 6457 | 22364 | 25000	3.5-7 | 8.8-7 | 9.9-7 | 2.5-5	6.6-6 | **3.9-4** | **-2.7-4** | **-2.6-3**	22:57 | 12:29 | 50:45 | 1:17:44
chr22b | 757 | 484;	89,189;5620 | 7211 | 25000 | 25000	3.1-7 | 9.7-7 | 1.5-5 | 2.1-5	1.7-6 | **3.4-4** | **-1.4-3** | **-1.8-3**	12:46 | 13:52 | 1:07:51 | 1:15:34

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
chr25a | 973 | 625;	53,200;5151 | 7127 | 25000 | 25000	8.6-7 | 8.6-7 | 3.7-5 | 3.4-5	**5.6-4** | **7.8-4** | **-9.5-3** | **-6.8-3**	21:04 | 26:03 | 2:10:29 | 2:23:01
els19 | 568 | 361;	40,128;5188 | 3809 | 21549 | 25000	9.9-7 | 9.9-7 | 9.7-7 | 2.1-5	8.1-5 | **1.9-4** | **1.5-4** | **-2.5-3**	7:01 | 3:28 | 22:01 | 37:50
esc16a | 406 | 256;	54,83;1895 | 25000 | 25000 | 25000	9.9-7 | 5.2-6 | 4.5-6 | 1.2-5	-4.2-5 | **-1.8-4** | **-1.8-4** | **-2.9-4**	1:16 | 12:04 | 9:37 | 19:50
esc16b | 406 | 256;	69,382;5102 | 22427 | 25000 | 25000	9.9-7 | 9.9-7 | 6.8-6 | 4.5-6	-4.1-5 | **-1.1-4** | **-3.6-4** | **-2.9-4**	3:29 | 8:51 | 8:36 | 16:39
esc16c | 406 | 256;	289,1044;9190 | 25000 | 25000 | 25000	9.9-7 | 9.3-6 | 9.0-6 | 2.3-5	-4.3-5 | **-7.8-4** | **-8.7-4** | **-1.4-3**	9:46 | 10:58 | 10:52 | 17:47
esc16d | 406 | 256;	0, 0;298 | 298 | 439 | 557	9.6-7 | 9.6-7 | 9.7-7 | 9.9-7	-5.6-6 | -5.6-6 | -2.8-6 | -8.9-7	08 | 08 | 10 | 25
esc16e | 406 | 256;	0, 0;342 | 342 | 488 | 1557	9.9-7 | 9.9-7 | 9.8-7 | 9.9-7	-6.3-6 | -6.3-6 | -3.4-6 | 2.4-8	08 | 08 | 11 | 1:09
esc16g | 406 | 256;	0, 0;447 | 447 | 498 | 1778	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	1.8-7 | 1.8-7 | 5.4-7 | -8.3-7	11 | 11 | 11 | 1:22
esc16h | 406 | 256;	41,57;1373 | 25000 | 25000 | 25000	9.8-7 | 1.3-6 | 1.6-6 | 2.8-6	-1.3-5 | -2.7-5 | -3.1-5 | -4.2-5	44 | 9:53 | 8:24 | 15:33
esc16i | 406 | 256;	17,17;864 | 1330 | 1330 | 5296	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.3-6 | -5.8-6 | -3.9-6 | -5.8-6	24 | 30 | 31 | 4:06
esc16j | 406 | 256;	0, 0;451 | 451 | 566 | 1084	9.6-7 | 9.6-7 | 9.9-7 | 9.9-7	-3.4-5 | -3.4-5 | -4.7-5 | -1.4-7	12 | 12 | 12 | 48
esc32a | 1582 | 1024;	46,78;1664 | 4931 | 2247 | 9630	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.1-6 | -2.0-6 | -1.1-6 | -2.7-6	32:32 | 1:06:25 | 27:49 | 2:44:37
esc32b | 1582 | 1024;	52,100;2196 | 25000 | 25000 | 25000	9.8-7 | 3.7-6 | 2.4-6 | 8.3-6	-5.1-5 | **-2.4-4** | **-2.2-4** | **-4.0-4**	45:50 | 5:18:19 | 4:31:51 | 7:59:47
esc32c | 1582 | 1024;	46,139;3562 | 25000 | 25000 | 25000	9.7-7 | 5.3-6 | 5.1-6 | 1.6-5	-4.1-6 | -5.4-5 | -5.2-5 | -9.8-5	1:06:19 | 4:58:47 | 4:00:23 | 8:01:19
esc32d | 1582 | 1024;	0, 0;678 | 678 | 799 | 1412	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-9.4-6 | -9.4-6 | -1.7-5 | -2.2-7	9:40 | 9:39 | 8:01 | 25:40
esc32e | 1582 | 1024;	40,47;1248 | 1108 | 905 | 784	9.9-7 | 9.8-7 | 8.6-7 | 9.7-7	8.7-6 | -3.8-7 | -9.2-6 | -3.1-6	22:00 | 16:09 | 8:32 | 14:30
esc32f | 1582 | 1024;	40,47;1248 | 1108 | 905 | 784	9.9-7 | 9.8-7 | 8.6-7 | 9.7-7	8.7-6 | -3.8-7 | -9.2-6 | -3.1-6	21:31 | 15:45 | 8:25 | 12:57
esc32g | 1582 | 1024;	0, 0;520 | 520 | 588 | 981	9.3-7 | 9.3-7 | 9.2-7 | 9.9-7	1.9-6 | 1.9-6 | -3.3-6 | 3.6-7	7:17 | 7:14 | 5:41 | 17:19
esc32h | 1582 | 1024;	97,236;4959 | 25000 | 25000 | 25000	9.9-7 | 9.4-6 | 1.2-5 | 2.8-5	-4.4-5 | **-4.1-4** | **-5.0-4** | **-7.4-4**	1:42:34 | 5:01:41 | 4:13:31 | 7:30:56
had12 | 232 | 144;	21,71;2037 | 25000 | 25000 | 25000	8.4-7 | 1.2-6 | 1.7-6 | 2.4-5	-9.2-6 | -1.1-5 | -1.4-5 | **-2.7-4**	30 | 3:59 | 5:01 | 6:50
had14 | 313 | 196;	38,97;3878 | 25000 | 25000 | 25000	9.9-7 | 4.0-6 | 4.1-6 | 3.7-5	-8.7-6 | -4.5-5 | -3.9-5 | **-4.7-4**	1:44 | 6:57 | 9:09 | 11:06
had16 | 406 | 256;	66,168;4900 | 19949 | 25000 | 25000	4.2-7 | 4.8-7 | 8.9-6 | 3.0-5	1.9-7 | 1.5-5 | -5.5-5 | **-2.6-4**	3:31 | 9:15 | 16:07 | 18:45
had18 | 511 | 324;	227,312;11708 | 25000 | 25000 | 25000	9.9-7 | 1.4-5 | 3.1-5 | 2.4-5	-2.3-5 | **-2.0-4** | **-3.1-4** | **-3.1-4**	16:16 | 19:32 | 22:29 | 29:56
had20 | 628 | 400;	93,197;7004 | 25000 | 25000 | 25000	9.9-7 | 1.4-5 | 3.1-5 | 2.8-5	-1.7-5 | **-1.9-4** | **-3.2-4** | **-4.4-4**	18:14 | 30:47 | 41:00 | 50:54
kra30a | 1393 | 900;	49,72;3208 | 25000 | 25000 | 25000	9.9-7 | 1.3-5 | 1.4-5 | 1.7-6	-6.5-5 | **-4.2-4** | **-5.7-4** | -5.9-5	52:13 | 3:45:29 | 5:11:22 | 5:42:45
kra30b | 1393 | 900;	81,101;3080 | 25000 | 25000 | 25000	9.9-7 | 1.1-5 | 1.1-5 | 1.8-5	-6.5-5 | **-3.7-4** | **-4.9-4** | **-6.1-4**	55:48 | 3:56:14 | 5:15:18 | 5:45:45
kra32 | 1582 | 1024;	67,83;2946 | 25000 | 25000 | 25000	9.9-7 | 9.1-6 | 1.1-5 | 1.7-5	-7.0-5 | **-3.2-4** | **-4.0-4** | **-5.0-4**	1:07:22 | 5:07:43 | 6:57:49 | 8:11:14
lipa20a | 628 | 400;	19,30;1300 | 1653 | 5698 | 25000	1.0-7 | 8.8-7 | 9.8-7 | 4.8-5	-1.4-6 | -4.4-6 | -2.0-5 | **-1.6-3**	1:35 | 1:43 | 6:54 | 51:25
lipa20b | 628 | 400;	4,14;700 | 1514 | 4747 | 25000	4.3-8 | 8.5-7 | 9.7-7 | **4.4-4**	-1.9-7 | 9.1-6 | -3.1-5 | **-2.0-2**	1:13 | 1:19 | 3:51 | 48:31
lipa30a | 1393 | 900;	443,1216;1300 | 3533 | 11683 | 16167	1.0-7 | 8.9-7 | 9.5-7 | 9.9-7	-4.3-10 | 8.3-6 | 3.2-5 | -3.8-6	47:33 | 26:59 | 1:52:11 | 3:46:31
lipa30b | 1393 | 900;	4, 9;820 | 2700 | 7516 | 25000	8.2-9 | 9.1-7 | 9.9-7 | **1.6-4**	-3.7-7 | 4.3-5 | 4.7-5 | **1.1-2**	11:08 | 16:33 | 52:22 | 5:31:56
lipa40a | 2458 | 1600;	153,546;3732 | 6483 | 18785 | 25000	5.5-7 | 8.8-7 | 9.8-7 | 9.5-6	1.2-6 | 4.2-5 | -4.1-5 | **-1.5-4**	3:01:05 | 3:32:47 | 19:15:19 | 26:56:27
lipa40b | 2458 | 1600;	5,18;991 | 4878 | 5970 | 25000	4.2-7 | 9.0-7 | 9.8-7 | **4.6-4**	1.9-7 | **1.1-4** | -6.4-5 | **-4.1-2**	1:02:59 | 2:20:09 | 4:11:06 | 23:33:11
nug12 | 232 | 144;	38,44;1788 | 25000 | 25000 | 25000	9.2-7 | 6.3-6 | 6.1-6 | 1.2-5	-6.5-5 | **-1.5-4** | **-1.8-4** | **-2.5-4**	29 | 3:33 | 4:46 | 7:03
nug14 | 313 | 196;	44,99;3776 | 25000 | 25000 | 25000	9.9-7 | 1.3-5 | 1.8-5 | 2.6-5	-2.9-5 | **-2.3-4** | **-3.2-4** | **-3.6-4**	1:44 | 6:57 | 8:09 | 11:12
nug15 | 358 | 225;	36,69;2588 | 25000 | 25000 | 25000	9.9-7 | 9.9-6 | 1.2-5 | 1.8-5	-2.7-5 | **-2.1-4** | **-2.7-4** | **-3.2-4**	1:33 | 8:53 | 11:00 | 15:06
nug16a | 406 | 256;	61,128;4637 | 25000 | 25000 | 25000	9.9-7 | 2.7-5 | 2.4-5 | 3.3-5	-2.4-5 | **-3.6-4** | **-4.1-4** | **-4.3-4**	3:57 | 12:01 | 14:36 | 19:00
nug16b | 406 | 256;	37,50;2018 | 25000 | 25000 | 25000	9.9-7 | 8.7-6 | 9.0-6 | 1.1-5	-5.7-5 | **-2.1-4** | **-2.6-4** | **-2.8-4**	1:25 | 11:12 | 13:23 | 18:50
nug17 | 457 | 289;	46,74;2936 | 25000 | 25000 | 25000	9.9-7 | 1.1-5 | 1.4-5 | 2.1-5	-2.5-5 | **-2.2-4** | **-2.9-4** | **-3.5-4**	2:59 | 15:00 | 19:07 | 24:12
nug18 | 511 | 324;	48,69;2592 | 25000 | 25000 | 25000	9.9-7 | 9.2-6 | 1.1-5 | 1.8-5	-2.5-5 | **-1.9-4** | **-2.4-4** | **-3.0-4**	3:21 | 18:47 | 25:10 | 30:51
nug20 | 628 | 400;	37,53;2120 | 25000 | 25000 | 25000	9.9-7 | 8.7-6 | 9.6-6 | 1.4-5	-3.8-5 | **-1.7-4** | **-2.1-4** | **-2.5-4**	4:02 | 30:28 | 40:29 | 48:41
nug21 | 691 | 441;	50,88;3190 | 25000 | 25000 | 25000	9.9-7 | 1.0-5 | 1.3-5 | 1.9-5	-1.9-5 | **-2.2-4** | **-2.8-4** | **-3.3-4**	9:15 | 38:17 | 51:44 | 1:04:08
nug22 | 757 | 484;	92,119;3840 | 25000 | 25000 | 25000	9.9-7 | 1.3-5 | 1.6-5 | 2.0-5	-4.1-5 | **-2.7-4** | **-3.6-4** | **-3.9-4**	14:16 | 49:55 | 1:02:41 | 1:14:17

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
nug24 | 898 | 576;	43,66;2359 | 25000 | 25000 | 25000	9.9-7 | 9.1-6 | 1.1-5 | 1.6-5	-2.8-5 | **-1.9-4** | **-2.3-4** | **-2.7-4**	14:12 | 1:17:49 | 1:40:05 | 1:57:03
nug25 | 973 | 625;	48,76;2708 | 25000 | 25000 | 25000	9.9-7 | 1.2-5 | 1.0-5 | 1.7-5	-1.6-5 | **-2.0-4** | **-2.0-4** | **-2.5-4**	19:25 | 1:35:46 | 1:53:26 | 2:16:27
nug27 | 1132 | 729;	49,86;3300 | 25000 | 25000 | 25000	9.9-7 | 1.0-5 | 1.3-5 | 1.7-5	-2.1-5 | **-2.0-4** | **-2.6-4** | **-2.8-4**	36:53 | 2:21:06 | 2:51:26 | 3:28:20
nug28 | 1216 | 784;	50,77;3190 | 25000 | 25000 | 25000	9.9-7 | 9.3-6 | 1.2-5 | 1.7-5	-2.0-5 | **-1.8-4** | **-2.2-4** | **-2.6-4**	40:26 | 2:47:04 | 3:27:54 | 4:02:11
nug30 | 1393 | 900;	44,68;2463 | 25000 | 25000 | 25000	9.9-7 | 8.7-6 | 1.1-5 | 1.7-5	-2.5-5 | **-1.6-4** | **-1.9-4** | **-2.2-4**	45:02 | 3:48:43 | 4:58:12 | 5:39:31
rou12 | 232 | 144;	117,152;4455 | 25000 | 25000 | 25000	8.8-7 | 2.9-5 | 3.4-5 | 3.9-5	1.2-5 | **-5.0-4** | **-5.8-4** | **-5.8-4**	1:04 | 4:11 | 4:46 | 6:29
rou15 | 358 | 225;	58,69;2342 | 25000 | 25000 | 25000	9.9-7 | 8.6-6 | 9.9-6 | 1.6-5	-2.9-5 | **-1.6-4** | **-2.2-4** | **-2.7-4**	1:26 | 9:50 | 12:31 | 15:14
rou20 | 628 | 400;	40,41;1640 | 25000 | 25000 | 25000	8.3-7 | 6.1-6 | 6.3-6 | 1.5-5	-4.3-5 | **-1.1-4** | **-1.3-4** | **-1.9-4**	3:26 | 30:03 | 46:12 | 52:43
scr12 | 232 | 144;	18,22;1000 | 1358 | 2019 | 5396	7.3-7 | 8.1-7 | 9.1-7 | 9.8-7	-1.0-7 | 2.4-5 | 1.8-5 | 1.5-5	09 | 11 | 21 | 1:27
scr15 | 358 | 225;	21,35;1060 | 2237 | 3429 | 8053	4.8-7 | 8.4-7 | 8.7-7 | 9.8-7	-1.4-6 | 8.8-5 | -5.4-5 | -1.8-5	33 | 41 | 1:17 | 4:35
scr20 | 628 | 400;	47,78;3398 | 25000 | 25000 | 25000	9.9-7 | 8.3-6 | 1.1-5 | 1.7-5	-3.7-5 | **-3.8-4** | **-4.7-4** | **-5.5-4**	7:08 | 29:35 | 41:44 | 50:32
ste36a | 1996 | 1296;	122,189;7344 | 25000 | 25000 | 25000	9.9-7 | 9.7-6 | 1.3-5 | 1.6-5	-8.1-5 | **-5.8-4** | **-6.8-4** | **-6.7-4**	6:29:21 | 9:38:26 | 12:37:18 | 14:09:11
ste36b | 1996 | 1296;	173,242;11851 | 25000 | 25000 | 25000	9.9-7 | 1.2-5 | 1.8-5 | 1.3-5	**-2.3-4** | **-1.5-3** | **-2.0-3** | **-2.1-3**	9:45:58 | 9:19:24 | 12:10:09 | 14:23:33
ste36c | 1996 | 1296;	143,202;10008 | 25000 | 25000 | 25000	9.9-7 | 1.2-5 | 1.5-5 | 1.6-5	-8.6-5 | **-5.8-4** | **-7.3-4** | **-7.2-4**	8:06:50 | 9:26:42 | 12:22:19 | 14:23:52
tai12a | 232 | 144;	16,29;1120 | 1377 | 2763 | 6599	3.0-8 | 8.0-7 | 9.9-7 | 9.9-7	1.9-7 | 1.0-5 | -2.4-5 | -1.2-5	10 | 11 | 23 | 1:45
tai12b | 232 | 144;	112,215;2709 | 6403 | 14442 | 25000	8.4-7 | 8.5-7 | 4.5-7 | 1.8-5	3.6-5 | **1.2-4** | 3.7-5 | **-5.8-4**	41 | 50 | 1:36 | 6:24
tai15a | 358 | 225;	47,50;1871 | 25000 | 25000 | 25000	9.9-7 | 7.0-6 | 6.9-6 | 1.3-5	-4.2-5 | **-1.2-4** | **-1.5-4** | **-2.1-4**	1:04 | 9:25 | 12:52 | 15:15
tai15b | 358 | 225;	114,233;6762 | 6964 | 7170 | 25000	9.9-7 | 9.9-7 | 9.9-7 | 4.1-6	**-1.7-4** | **-1.7-4** | **-1.7-4** | **-4.3-4**	3:01 | 2:35 | 3:22 | 14:37
tai17a | 457 | 289;	44,46;1756 | 25000 | 25000 | 25000	9.9-7 | 6.1-6 | 6.1-6 | 1.4-5	-3.8-5 | **-1.1-4** | **-1.3-4** | **-2.0-4**	1:41 | 15:39 | 22:31 | 25:29
tai20a | 628 | 400;	45,47;1748 | 25000 | 25000 | 25000	9.9-7 | 5.6-6 | 5.8-6 | 1.5-5	-3.0-5 | -9.9-5 | **-1.2-4** | **-1.9-4**	3:36 | 31:14 | 47:13 | 50:21
tai20b | 628 | 400;	171,484;7416 | 14238 | 23726 | 25000	9.5-7 | 3.6-7 | 7.3-7 | 1.7-5	**2.4-4** | **1.4-4** | 9.9-5 | **-1.5-3**	9:22 | 14:29 | 28:00 | 50:45
tai25a | 973 | 625;	33,42;2630 | 2201 | 1845 | 25000	9.9-7 | 9.5-7 | 9.9-7 | 1.7-6	**-8.5-4** | **-8.0-4** | **-7.2-4** | **-1.8-3**	14:52 | 8:38 | 9:24 | 2:27:04
tai25b | 973 | 625;	296,344;18325 | 25000 | 25000 | 25000	9.9-7 | 2.9-5 | 3.7-5 | 4.2-5	**-2.7-4** | **-2.0-3** | **-2.4-3** | **-2.5-3**	1:18:04 | 1:28:33 | 1:55:04 | 2:21:35
tai30a | 1393 | 900;	39,39;1614 | 25000 | 25000 | 25000	9.9-7 | 4.7-6 | 4.6-6 | 1.3-5	-2.3-5 | -6.3-5 | -7.3-5 | **-1.3-4**	29:11 | 3:53:48 | 6:09:25 | 6:00:13
tai30b | 1393 | 900;	236,342;16584 | 25000 | 25000 | 25000	9.9-7 | 2.0-5 | 2.4-5 | 2.6-5	**-1.8-4** | **-1.0-3** | **-1.2-3** | **-1.2-3**	2:52:00 | 3:42:12 | 4:28:02 | 5:38:24
tai35a | 1888 | 1225;	38,38;3467 | 25000 | 25000 | 25000	9.9-7 | 3.9-6 | 4.0-6 | 1.3-5	-1.8-5 | -4.8-5 | -5.6-5 | **-1.0-4**	1:56:18 | 9:21:21 | 15:00:46 | 12:53:01
tai35b | 1888 | 1225;	142,214;10915 | 25000 | 25000 | 25000	9.9-7 | 2.1-5 | 2.4-5 | 2.8-5	**-1.2-4** | **-9.1-4** | **-1.0-3** | **-1.1-3**	8:01:01 | 8:51:20 | 11:15:52 | 12:51:27
tai40a | 2458 | 1600;	33,33;3395 | 25000 | 25000 | 25000	9.9-7 | 3.7-6 | 4.0-6 | 1.4-5	-1.8-5 | -4.6-5 | -5.3-5 | **-1.0-4**	3:56:34 | 20:22:53 | 31:45:29 | 26:00:47
tai40b | 2458 | 1600;	101,146;7124 | 25000 | 25000 | 25000	9.9-7 | 1.9-5 | 2.5-5 | 3.1-5	**-1.1-4** | **-7.2-4** | **-8.1-4** | **-8.5-4**	10:55:44 | 17:50:19 | 23:17:25 | 25:23:31
tho30 | 1393 | 900;	44,74;2925 | 25000 | 25000 | 25000	9.9-7 | 1.1-5 | 1.5-5 | 2.2-5	-4.8-5 | **-2.6-4** | **-3.4-4** | **-4.0-4**	1:03:01 | 3:46:49 | 4:46:03 | 5:44:33
tho40 | 2458 | 1600;	24,51;3998 | 25000 | 25000 | 25000	9.9-7 | 9.3-6 | 1.3-5 | 2.0-5	-4.2-5 | **-2.1-4** | **-2.7-4** | **-3.2-4**	5:08:15 | 17:12:50 | 24:35:42 | 26:05:11
be100.1 | 101 | 101;	14,14;1551 | 1705 | 2031 | 1627	9.5-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.6-7 | 2.0-6 | 4.0-7 | 1.6-7	07 | 07 | 07 | 08
be100.2 | 101 | 101;	0, 0;1666 | 1666 | 1746 | 1383	9.6-7 | 9.6-7 | 9.9-7 | 9.9-7	9.3-7 | 9.3-7 | -2.8-7 | 4.1-7	07 | 07 | 06 | 07
be100.3 | 101 | 101;	17,17;1800 | 2064 | 2120 | 1679	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.6-8 | -9.6-7 | -3.5-7 | -1.1-6	08 | 08 | 08 | 08
be100.4 | 101 | 101;	53,53;1308 | 1946 | 2709 | 1789	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.5-7 | -7.4-7 | -4.6-7 | -1.6-7	07 | 07 | 09 | 08
be100.5 | 101 | 101;	35,35;1226 | 1550 | 1889 | 1336	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.7-7 | -4.6-7 | -8.7-7 | 1.0-7	07 | 06 | 07 | 07
be100.6 | 101 | 101;	41,41;1580 | 2150 | 2260 | 1415	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.0-7 | -6.2-7 | -6.2-7 | -4.6-8	08 | 09 | 08 | 07
be100.7 | 101 | 101;	36,36;1267 | 1818 | 1901 | 1481	9.9-7 | 9.9-7 | 9.9-7 | 9.6-7	-2.5-7 | -1.2-6 | -3.4-7 | 1.8-7	06 | 07 | 07 | 07
be100.8 | 101 | 101;	18,18;1347 | 1623 | 1590 | 1433	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	6.5-8 | 8.7-7 | 6.2-7 | -2.7-6	06 | 06 | 05 | 07
be100.9 | 101 | 101;	15,16;1194 | 1254 | 1862 | 1261	9.6-7 | 9.9-7 | 9.9-7 | 9.1-7	3.7-7 | -1.7-7 | -5.4-7 | -1.2-6	06 | 05 | 07 | 06
be100.10 | 101 | 101;	21,21;994 | 1358 | 1485 | 1282	9.7-7 | 9.9-7 | 9.9-7 | 9.8-7	-5.1-7 | -4.2-7 | -5.1-7 | -4.7-7	05 | 05 | 05 | 06
be120.3.1 | 121 | 121;	95,99;1550 | 1955 | 2435 | 1437	9.8-7 | 9.9-7 | 9.9-7 | 9.8-7	6.3-7 | -4.9-7 | -7.8-7 | 1.0-6	13 | 10 | 11 | 09
be120.3.2 | 121 | 121;	84,87;1791 | 2054 | 2407 | 1640	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.2-7 | -7.7-7 | -1.1-6 | -5.7-7	14 | 10 | 11 | 10

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
be120.3.3 | 121 | 121;	56,60;1482 | 1976 | 2236 | 1497	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.6-7 | -5.0-7 | -9.2-7 | -5.5-7	10 | 10 | 10 | 10
be120.3.4 | 121 | 121;	16,16;1753 | 2116 | 2445 | 1611	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.8-7 | -1.4-7 | -2.0-6 | -5.7-7	10 | 10 | 11 | 10
be120.3.5 | 121 | 121;	101,102;1396 | 2589 | 2856 | 2686	9.4-7 | 9.9-7 | 9.9-7 | 9.9-7	4.8-7 | 1.6-7 | 1.1-7 | 1.2-8	12 | 13 | 13 | 17
be120.3.6 | 121 | 121;	73,76;1486 | 2226 | 2819 | 1827	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.0-7 | -7.6-7 | -3.8-7 | 3.2-7	12 | 11 | 13 | 11
be120.3.7 | 121 | 121;	164,175;2473 | 4269 | 4626 | 3087	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	2.2-7 | -2.5-7 | -1.6-7 | -2.5-7	20 | 20 | 22 | 19
be120.3.8 | 121 | 121;	166,175;2295 | 3281 | 4065 | 2628	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	3.5-7 | 3.9-7 | -2.4-7 | 9.5-8	18 | 14 | 18 | 16
be120.3.9 | 121 | 121;	136,136;1279 | 3510 | 6116 | 2770	9.4-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.9-7 | -3.6-7 | -4.8-7 | -2.5-8	13 | 16 | 28 | 18
be120.3.10 | 121 | 121;	38,38;1376 | 1586 | 2056 | 1322	9.9-7 | 9.9-7 | 9.9-7 | 9.7-7	-1.7-6 | -3.4-6 | -1.5-6 | 1.9-7	09 | 08 | 09 | 08
be120.8.1 | 121 | 121;	47,49;1386 | 1835 | 2008 | 1241	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	6.7-7 | -1.1-6 | -8.1-7 | -1.2-6	08 | 08 | 09 | 08
be120.8.2 | 121 | 121;	117,117;1764 | 3638 | 3422 | 2501	9.9-7 | 9.9-7 | 9.9-7 | 9.4-7	8.3-7 | -1.1-7 | -1.0-6 | -3.9-8	14 | 17 | 16 | 16
be120.8.3 | 121 | 121;	53,53;1259 | 1888 | 2232 | 1635	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.1-7 | -4.4-7 | -4.0-7 | 1.5-8	09 | 09 | 11 | 11
be120.8.4 | 121 | 121;	61,63;1623 | 1985 | 2273 | 1603	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	8.3-7 | -1.4-7 | -3.6-7 | -1.5-6	11 | 09 | 11 | 10
be120.8.5 | 121 | 121;	23,23;1855 | 2101 | 2669 | 1747	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.9-8 | -5.0-7 | -9.2-8 | -2.0-8	11 | 11 | 13 | 11
be120.8.6 | 121 | 121;	65,66;1389 | 1853 | 2238 | 1389	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-6 | -5.7-7 | -1.2-6 | 1.8-7	11 | 09 | 10 | 09
be120.8.7 | 121 | 121;	34,36;1245 | 1837 | 1934 | 1683	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.0-6 | 4.7-7 | -6.5-9 | 8.2-7	09 | 09 | 09 | 11
be120.8.8 | 121 | 121;	30,30;1120 | 1552 | 1893 | 1314	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.5-7 | -1.1-6 | -4.0-7 | -2.2-6	08 | 08 | 09 | 08
be120.8.9 | 121 | 121;	44,46;1290 | 1672 | 1935 | 1286	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.2-7 | -5.9-7 | -2.1-7 | 2.0-6	09 | 09 | 09 | 08
be120.8.10 | 121 | 121;	114,114;1458 | 1921 | 2460 | 1561	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.2-7 | -2.2-7 | -5.0-7 | -3.1-8	13 | 10 | 12 | 10
be150.3.1 | 151 | 151;	64,71;1660 | 2318 | 2559 | 1865	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.2-6 | -1.4-6 | -3.3-7 | -1.0-6	17 | 17 | 18 | 18
be150.3.2 | 151 | 151;	74,83;1878 | 2885 | 3145 | 1959	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.7-7 | -6.1-7 | -5.4-7 | -3.5-7	20 | 20 | 21 | 19
be150.3.3 | 151 | 151;	58,64;1562 | 2110 | 2509 | 1731	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	8.7-7 | 2.2-6 | -1.3-6 | -2.0-6	17 | 16 | 17 | 17
be150.3.4 | 151 | 151;	48,49;1632 | 2612 | 2982 | 1977	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.7-7 | 3.2-6 | -1.2-7 | -8.6-7	17 | 19 | 20 | 19
be150.3.5 | 151 | 151;	66,76;1696 | 2186 | 2700 | 1770	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.0-7 | -7.7-7 | -3.5-7 | -4.3-7	18 | 16 | 19 | 17
be150.3.6 | 151 | 151;	64,70;1663 | 2053 | 2501 | 1791	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.6-7 | -1.1-7 | -2.9-7 | -5.0-7	17 | 15 | 16 | 17
be150.3.7 | 151 | 151;	63,66;1691 | 2597 | 2920 | 1713	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	9.9-7 | -4.8-7 | -5.4-7 | -1.4-7	18 | 18 | 19 | 16
be150.3.8 | 151 | 151;	106,110;1943 | 3097 | 3358 | 2080	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.5-7 | -5.4-7 | -3.1-7 | -4.3-7	21 | 22 | 22 | 20
be150.3.9 | 151 | 151;	33,33;1260 | 1593 | 2067 | 1171	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.4-7 | -1.2-6 | -9.9-7 | 1.9-6	12 | 11 | 14 | 12
be150.3.10 | 151 | 151;	146,150;2266 | 3526 | 4499 | 2545	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	3.1-7 | -3.3-7 | -3.0-7 | -1.3-7	25 | 25 | 30 | 25
be150.8.1 | 151 | 151;	53,58;1456 | 2069 | 2254 | 1551	9.2-7 | 9.9-7 | 9.9-7 | 9.9-7	5.1-7 | -2.8-7 | 1.4-7 | -1.0-6	15 | 15 | 15 | 15
be150.8.2 | 151 | 151;	64,69;1590 | 1940 | 2387 | 1431	9.9-7 | 9.6-7 | 9.9-7 | 9.9-7	4.8-7 | -4.4-7 | -6.6-7 | -1.6-6	17 | 14 | 15 | 14
be150.8.3 | 151 | 151;	66,72;1719 | 2448 | 2580 | 1685	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.6-7 | -6.3-7 | 8.3-7 | 6.3-7	18 | 18 | 18 | 17
be150.8.4 | 151 | 151;	67,70;1568 | 2188 | 2680 | 1547	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	6.2-7 | -7.0-7 | -6.1-7 | -8.6-7	17 | 16 | 18 | 15
be150.8.5 | 151 | 151;	71,79;1743 | 2648 | 3016 | 1775	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.9-8 | -8.8-7 | -7.6-7 | -3.2-7	19 | 20 | 21 | 17
be150.8.6 | 151 | 151;	64,65;1480 | 1989 | 2580 | 1644	9.4-7 | 9.9-7 | 9.9-7 | 9.9-7	4.2-7 | -1.9-6 | -4.0-7 | -5.5-7	15 | 14 | 16 | 16
be150.8.7 | 151 | 151;	80,84;1738 | 2715 | 3379 | 2406	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | -3.8-7 | -4.2-7 | 1.7-7	19 | 19 | 22 | 23
be150.8.8 | 151 | 151;	127,134;1946 | 3509 | 3388 | 2535	9.9-7 | 9.6-7 | 9.9-7 | 9.9-7	8.2-7 | -8.5-7 | -9.1-7 | -4.3-7	23 | 25 | 23 | 24
be150.8.9 | 151 | 151;	112,121;1890 | 2587 | 3319 | 1777	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.6-7 | -2.9-7 | -7.3-7 | -7.4-7	23 | 19 | 23 | 17
be150.8.10 | 151 | 151;	65,71;1714 | 2371 | 2833 | 1854	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.4-7 | -6.1-7 | -2.8-7 | -3.1-7	17 | 17 | 19 | 18
be200.3.1 | 201 | 201;	76,86;1784 | 2543 | 2841 | 1754	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.0-6 | -7.6-7 | -1.2-6 | -8.7-7	31 | 30 | 32 | 30
be200.3.2 | 201 | 201;	95,109;1962 | 2629 | 3278 | 1897	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	3.1-7 | -3.9-7 | -5.7-7 | -6.1-7	36 | 32 | 37 | 32
be200.3.3 | 201 | 201;	172,181;2565 | 4645 | 5206 | 3067	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	7.5-7 | -6.8-7 | -4.4-7 | -6.0-7	49 | 55 | 1:01 | 52
be200.3.4 | 201 | 201;	101,112;2097 | 3035 | 3513 | 2142	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	7.2-7 | -1.1-6 | -9.2-7 | 2.9-8	38 | 37 | 40 | 36
be200.3.5 | 201 | 201;	165,178;2394 | 3598 | 4665 | 2720	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.1-7 | -8.1-7 | -3.0-7 | -3.3-7	46 | 42 | 55 | 46

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
be200.3.6 | 201 | 201;	83,92;1852 | 2746 | 3012 | 1783	9.0-7 | 9.9-7 | 9.9-7 | 9.9-7	4.6-7 | -1.7-7 | -9.3-8 | 5.5-7	33 | 33 | 33 | 30
be200.3.7 | 201 | 201;	79,83;2050 | 3568 | 3780 | 2272	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.3-7 | 3.5-8 | -5.1-7 | 4.4-7	36 | 43 | 43 | 39
be200.3.8 | 201 | 201;	92,102;2068 | 2966 | 3445 | 2079	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	9.5-7 | -1.6-6 | -1.1-6 | -1.3-6	37 | 35 | 38 | 35
be200.3.9 | 201 | 201;	201,212;3478 | 4670 | 5441 | 3619	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.4-7 | -1.2-6 | -7.0-7 | -7.8-7	1:02 | 55 | 1:01 | 1:02
be200.3.10 | 201 | 201;	91,97;1862 | 2955 | 3504 | 2498	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.5-7 | -8.8-7 | -4.7-7 | -7.2-8	34 | 35 | 39 | 41
be200.8.1 | 201 | 201;	96,96;2493 | 3743 | 4153 | 2689	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.1-7 | -8.3-7 | -4.6-7 | -2.8-7	43 | 45 | 49 | 47
be200.8.2 | 201 | 201;	73,81;1721 | 2708 | 2918 | 1695	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.4-7 | 3.9-7 | -4.7-7 | -6.4-7	30 | 32 | 32 | 29
be200.8.3 | 201 | 201;	106,119;1993 | 3009 | 3465 | 2437	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.7-7 | -4.6-7 | -6.9-7 | -5.2-7	37 | 37 | 41 | 42
be200.8.4 | 201 | 201;	78,89;1752 | 2987 | 3187 | 1939	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.9-7 | -9.7-7 | -9.0-7 | -1.2-6	33 | 37 | 37 | 33
be200.8.5 | 201 | 201;	91,99;1956 | 2836 | 2951 | 1868	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.4-7 | -3.0-7 | -1.5-7 | -7.6-9	37 | 36 | 35 | 32
be200.8.6 | 201 | 201;	70,71;1900 | 3276 | 3712 | 2786	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	2.9-7 | -1.2-6 | -5.8-7 | -5.7-7	33 | 42 | 42 | 47
be200.8.7 | 201 | 201;	93,103;2043 | 3052 | 3455 | 1968	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	1.5-6 | -1.7-6 | -2.5-6 | -6.3-7	38 | 37 | 40 | 34
be200.8.8 | 201 | 201;	94,101;1947 | 2936 | 3084 | 1872	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.3-7 | -5.8-7 | -9.8-8 | -7.8-7	36 | 36 | 34 | 32
be200.8.9 | 201 | 201;	85,95;1967 | 2670 | 3069 | 1877	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	4.3-7 | 5.3-7 | -3.5-7 | -1.2-7	37 | 34 | 36 | 33
be200.8.10 | 201 | 201;	84,95;1857 | 2779 | 3127 | 1748	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.4-6 | -7.6-7 | -8.9-7 | -7.3-7	35 | 35 | 36 | 29
be250.1 | 251 | 251;	122,123;2800 | 4327 | 5345 | 3537	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.7-7 | -2.0-7 | -3.6-7 | -4.1-7	1:13 | 1:16 | 1:35 | 1:37
be250.2 | 251 | 251;	121,121;2842 | 3827 | 5108 | 3044	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.9-7 | -8.6-7 | -5.3-7 | -8.0-7	1:12 | 1:08 | 1:28 | 1:22
be250.3 | 251 | 251;	84,89;2200 | 3796 | 4331 | 2592	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.7-7 | -1.1-6 | -7.3-7 | -1.1-6	59 | 1:11 | 1:18 | 1:11
be250.4 | 251 | 251;	208,209;3850 | 8023 | 8350 | 6453	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.2-6 | -1.1-6 | -1.1-6 | -2.9-7	1:42 | 2:23 | 2:24 | 2:53
be250.5 | 251 | 251;	115,127;2791 | 4460 | 5089 | 3174	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.5-7 | -7.5-7 | -6.4-7 | -7.2-7	1:15 | 1:23 | 1:31 | 1:26
be250.6 | 251 | 251;	120,141;2452 | 4095 | 4560 | 2812	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.7-7 | -5.7-7 | -5.4-7 | -4.3-7	1:08 | 1:13 | 1:17 | 1:16
be250.7 | 251 | 251;	127,141;2664 | 4345 | 5048 | 3295	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	5.0-7 | -1.1-7 | -2.4-7 | -2.4-7	1:12 | 1:20 | 1:28 | 1:31
be250.8 | 251 | 251;	99,113;2172 | 3759 | 4663 | 2911	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.2-6 | 1.9-7 | -8.8-7 | 2.5-7	1:00 | 1:08 | 1:18 | 1:18
be250.9 | 251 | 251;	189,191;3319 | 4624 | 5976 | 4169	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.0-6 | -1.1-6 | -1.1-6 | -4.8-7	1:32 | 1:26 | 1:49 | 1:54
be250.10 | 251 | 251;	174,189;2695 | 5963 | 6638 | 3989	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.5-7 | -7.6-7 | -7.4-7 | -4.2-7	1:18 | 1:46 | 1:55 | 1:49
bqp100-1 | 101 | 101;	23,23;1229 | 1541 | 1923 | 1291	9.4-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.0-7 | -6.2-7 | -6.0-7 | 3.1-6	06 | 06 | 07 | 06
bqp100-2 | 101 | 101;	126,139;1998 | 2786 | 3384 | 2349	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	9.4-7 | -4.2-8 | -6.8-7 | -1.8-7	13 | 10 | 11 | 11
bqp100-3 | 101 | 101;	12,12;1999 | 2345 | 5083 | 3980	9.9-7 | 9.8-7 | 9.9-7 | 9.9-7	1.4-6 | -1.1-7 | -2.8-7 | -3.8-7	08 | 09 | 16 | 18
bqp100-4 | 101 | 101;	96,97;1214 | 2350 | 2729 | 2995	9.5-7 | 9.9-7 | 9.8-7 | 9.9-7	-7.9-8 | -5.6-7 | -3.2-7 | -4.0-8	08 | 09 | 10 | 14
bqp100-5 | 101 | 101;	243,250;1819 | 3579 | 3879 | 3205	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	3.7-8 | -5.1-7 | -4.2-7 | -2.2-8	15 | 14 | 13 | 15
bqp100-6 | 101 | 101;	23,23;1363 | 1712 | 1918 | 1376	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.5-6 | -7.6-7 | -3.2-7 | 3.5-7	06 | 07 | 06 | 06
bqp100-7 | 101 | 101;	49,55;1342 | 1852 | 2272 | 1637	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.1-7 | -2.2-6 | -9.0-7 | -6.0-7	07 | 07 | 08 | 08
bqp100-8 | 101 | 101;	67,67;1717 | 3071 | 3957 | 2931	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.4-7 | -3.4-7 | -3.6-7 | -2.2-8	11 | 12 | 13 | 14
bqp100-9 | 101 | 101;	37,37;2206 | 2906 | 3255 | 2265	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-9.3-8 | 6.8-8 | 8.7-8 | -2.4-6	10 | 11 | 11 | 11
bqp100-10 | 101 | 101;	72,73;2208 | 3417 | 3703 | 4123	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.3-7 | -8.9-7 | -6.6-7 | -6.0-8	12 | 13 | 12 | 19
bqp250-1 | 251 | 251;	153,168;3069 | 4593 | 4946 | 3216	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | -8.8-7 | 1.0-6 | -8.1-7	1:20 | 1:19 | 1:26 | 1:28
bqp250-2 | 251 | 251;	115,134;2410 | 4388 | 5097 | 3293	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-6 | -1.1-6 | -7.4-7 | -6.2-7	1:02 | 1:26 | 1:30 | 1:31
bqp250-3 | 251 | 251;	93,105;2107 | 4039 | 5332 | 3203	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.1-6 | -2.1-6 | -3.1-7 | -7.5-7	53 | 1:08 | 1:29 | 1:28
bqp250-4 | 251 | 251;	92,94;2350 | 3662 | 4539 | 2548	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.5-7 | -1.4-6 | -6.7-7 | 1.5-7	59 | 1:05 | 1:20 | 1:09
bqp250-5 | 251 | 251;	147,166;2580 | 4558 | 8062 | 4487	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.4-7 | -1.1-6 | -4.8-7 | -5.6-7	1:16 | 1:23 | 2:23 | 2:03
bqp250-6 | 251 | 251;	106,122;2126 | 4722 | 5380 | 3480	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.6-6 | -1.2-6 | -1.2-6 | -2.6-7	1:03 | 1:27 | 1:35 | 1:34
bqp250-7 | 251 | 251;	114,137;2407 | 4470 | 5138 | 3128	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.4-6 | -1.2-6 | -1.7-6 | -1.2-6	1:09 | 1:22 | 1:28 | 1:25
bqp250-8 | 251 | 251;	93,113;2008 | 2961 | 3534 | 2126	9.5-7 | 9.9-7 | 9.9-7 | 9.9-7	3.0-7 | -3.3-7 | -6.5-7 | -5.8-8	57 | 55 | 1:00 | 57

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
bqp250-9 | 251 | 251;	96,114;2057 | 4745 | 6121 | 3440	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.5-7 | -5.9-8 | -4.0-7 | -3.3-7	58 | 1:25 | 1:45 | 1:34
bqp250-10 | 251 | 251;	103,123;2188 | 3342 | 3992 | 2122	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.4-7 | -1.1-6 | -1.2-6 | -1.1-6	1:01 | 1:01 | 1:06 | 57
bqp500-1 | 501 | 501;	138,171;2499 | 6473 | 6932 | 4086	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.0-6 | -1.4-6 | -3.4-7 | -1.6-6	5:20 | 8:35 | 9:45 | 9:13
bqp500-2 | 501 | 501;	142,194;2390 | 8008 | 10582 | 4862	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.1-7 | -4.2-7 | -8.6-8 | -1.2-6	5:29 | 10:46 | 14:42 | 10:52
bqp500-3 | 501 | 501;	135,180;2390 | 8192 | 8915 | 4965	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	7.6-7 | -1.5-6 | 3.7-7 | -5.8-7	6:31 | 12:53 | 12:25 | 11:22
bqp500-4 | 501 | 501;	128,174;2390 | 7188 | 9012 | 4031	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.1-7 | -1.0-6 | -3.8-7 | -1.2-6	6:08 | 10:37 | 12:10 | 9:11
bqp500-5 | 501 | 501;	169,206;2910 | 6898 | 7641 | 4541	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | -8.9-7 | -1.2-6 | -8.2-7	7:25 | 10:34 | 10:57 | 10:19
bqp500-6 | 501 | 501;	167,214;2780 | 6819 | 7010 | 4236	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	4.6-7 | -8.9-7 | -1.4-6 | -7.4-7	7:30 | 10:22 | 9:43 | 9:37
bqp500-7 | 501 | 501;	157,202;2742 | 6878 | 8592 | 4587	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | -5.4-7 | -7.9-8 | -5.2-7	7:27 | 10:23 | 12:40 | 10:33
bqp500-8 | 501 | 501;	142,184;2520 | 7131 | 7647 | 4867	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	3.4-7 | -5.3-7 | -9.0-7 | -7.5-7	6:26 | 10:54 | 10:22 | 11:02
bqp500-9 | 501 | 501;	145,193;2495 | 6666 | 6700 | 3803	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.5-6 | -1.7-6 | -1.2-6 | -8.1-7	6:37 | 10:21 | 9:31 | 8:43
bqp500-10 | 501 | 501;	138,177;2473 | 7189 | 9162 | 5067	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	1.5-6 | -1.4-6 | -1.3-6 | -1.6-6	6:36 | 10:43 | 12:37 | 11:34
gka8a | 101 | 101;	0, 0;4267 | 4267 | 5803 | 14854	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	-1.3-6 | -1.3-6 | 9.0-7 | -1.7-6	15 | 15 | 17 | 1:10
gka9b | 101 | 101;	3, 7;1047 | 1182 | 1314 | 681	2.5-9 | 9.9-7 | 8.8-7 | 9.0-7	1.9-7 | -5.5-5 | -1.5-5 | 2.6-7	04 | 04 | 05 | 03
gka10b | 126 | 126;	1, 1;1315 | 1347 | 1811 | 2544	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.5-5 | -2.3-5 | -2.4-5 | -1.1-5	08 | 08 | 10 | 16
gka7c | 101 | 101;	135,135;2010 | 3966 | 5025 | 2896	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.1-7 | -6.8-7 | -5.2-7 | -4.2-7	12 | 15 | 16 | 14
gka1d | 101 | 101;	112,112;2043 | 3220 | 3006 | 2239	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.7-8 | -3.1-7 | -4.1-7 | -1.7-7	12 | 12 | 10 | 10
gka2d | 101 | 101;	39,42;1319 | 1768 | 2542 | 1431	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.2-6 | -2.8-7 | -2.0-7 | 1.3-7	08 | 09 | 10 | 07
gka3d | 101 | 101;	46,46;1306 | 3149 | 3429 | 3416	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	8.0-7 | -1.8-7 | -1.7-8 | 4.3-8	08 | 12 | 12 | 16
gka4d | 101 | 101;	90,90;1210 | 2329 | 2626 | 1386	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	3.5-7 | -4.0-7 | -6.1-7 | 2.1-7	09 | 09 | 09 | 07
gka5d | 101 | 101;	31,33;1276 | 1664 | 1933 | 1370	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.5-7 | -1.4-7 | -2.2-7 | 5.0-7	07 | 07 | 07 | 06
gka6d | 101 | 101;	23,23;1391 | 1827 | 1901 | 1559	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	3.9-7 | 3.2-7 | 4.2-7 | 2.1-6	06 | 07 | 07 | 07
gka7d | 101 | 101;	32,32;1151 | 1673 | 1685 | 1284	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.0-6 | -1.1-6 | -9.3-7 | 4.3-7	07 | 07 | 06 | 06
gka8d | 101 | 101;	46,46;2653 | 3248 | 2945 | 2317	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.8-7 | -4.1-8 | -3.2-7 | -1.8-7	13 | 13 | 11 | 11
gka9d | 101 | 101;	4, 4;1373 | 1374 | 1547 | 1311	9.5-7 | 9.9-7 | 9.9-7 | 9.6-7	-1.6-6 | -2.7-7 | -4.9-7 | 2.6-6	06 | 06 | 05 | 06
gka10d | 101 | 101;	32,32;1234 | 1719 | 1787 | 1534	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.9-7 | -5.5-7 | -1.1-6 | 1.9-6	06 | 07 | 06 | 07
gka1e | 201 | 201;	121,123;2921 | 4192 | 5075 | 2805	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.2-7 | -3.4-7 | -3.4-7 | -2.3-7	48 | 48 | 57 | 47
gka2e | 201 | 201;	106,114;2270 | 3506 | 3885 | 2344	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	7.5-7 | -8.7-7 | -8.5-7 | -6.5-7	39 | 41 | 44 | 40
gka3e | 201 | 201;	103,111;2082 | 3496 | 3874 | 2795	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	4.4-7 | -8.1-7 | -5.5-7 | -3.7-8	36 | 41 | 44 | 50
gka4e | 201 | 201;	100,101;2200 | 4273 | 4709 | 2960	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.2-7 | -7.4-7 | -5.8-7 | -3.9-7	38 | 49 | 53 | 50
gka5e | 201 | 201;	119,128;2431 | 3530 | 4162 | 2589	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	3.5-7 | -4.0-7 | -3.0-7 | -3.3-7	42 | 41 | 46 | 43
gka1f | 501 | 501;	166,203;2780 | 6717 | 8147 | 4600	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	5.9-7 | -1.3-6 | -1.2-6 | -5.6-7	6:32 | 9:38 | 11:28 | 10:31
gka2f | 501 | 501;	205,242;3541 | 7519 | 8949 | 5403	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.5-6 | -1.5-6 | -1.4-6 | -1.0-6	7:54 | 10:50 | 12:52 | 12:10
gka3f | 501 | 501;	174,216;2954 | 6102 | 7037 | 3957	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	6.8-7 | -1.1-6 | -2.0-6 | -1.6-7	6:51 | 9:07 | 10:46 | 9:07
gka4f | 501 | 501;	183,222;3101 | 6673 | 7529 | 4070	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	8.2-8 | -1.1-6 | -4.2-7 | -3.5-7	7:10 | 9:13 | 11:20 | 9:14
gka5f | 501 | 501;	142,187;2520 | 6482 | 7023 | 4210	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.5-8 | -5.9-7 | -9.4-7 | -7.5-7	5:53 | 9:14 | 10:36 | 9:45
soybean-small.2 | 48 | 47;	0, 0;463 | 463 | 1743 | 544	9.9-7 | 9.9-7 | 5.4-7 | 8.7-7	-1.2-6 | -1.2-6 | 5.1-7 | -4.4-7	01 | 01 | 05 | 03
soybean-small.3 | 48 | 47;	0, 0;212 | 212 | 123 | 530	9.6-7 | 9.6-7 | 8.9-7 | 8.8-7	3.6-8 | 3.6-8 | 5.8-6 | 7.8-6	01 | 01 | 00 | 03
soybean-small.4 | 48 | 47;	0, 0;440 | 440 | 478 | 868	9.5-7 | 9.5-7 | 9.9-7 | 9.9-7	-1.6-6 | -1.6-6 | -1.7-9 | -1.1-6	01 | 01 | 01 | 04
soybean-small.5 | 48 | 47;	0, 0;275 | 275 | 394 | 1106	9.6-7 | 9.6-7 | 9.9-7 | 9.9-7	-1.8-7 | -1.8-7 | 6.8-7 | -6.1-7	01 | 01 | 01 | 06
soybean-small.6 | 48 | 47;	0, 0;368 | 368 | 556 | 1001	9.1-7 | 9.1-7 | 9.3-7 | 8.6-7	-3.3-7 | -3.3-7 | -7.3-6 | -5.4-7	01 | 01 | 01 | 05
soybean-small.7 | 48 | 47;	0, 0;385 | 385 | 851 | 1099	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	-1.2-6 | -1.2-6 | -4.5-7 | -6.7-7	01 | 01 | 03 | 05
soybean-small.8 | 48 | 47;	24,24;1012 | 1333 | 5863 | 2647	9.3-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.1-6 | -2.8-7 | -5.9-8 | -5.9-7	03 | 03 | 18 | 15

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
soybean-small.9 | 48 | 47;	0, 0;632 | 632 | 924 | 1323	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.5-6 | -1.5-6 | -8.7-7 | -2.4-6	02 | 02 | 02 | 07
soybean-small.10 | 48 | 47;	0, 0;327 | 327 | 531 | 1100	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	-5.9-6 | -5.9-6 | -2.8-6 | -8.8-6	01 | 01 | 01 | 05
soybean-small.11 | 48 | 47;	1, 1;700 | 834 | 1834 | 1428	8.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.5-7 | -1.7-7 | 6.8-8 | -6.6-6	02 | 02 | 09 | 07
soybean-large.2 | 308 | 307;	2, 2;1171 | 1190 | 5050 | 2261	9.9-7 | 9.2-7 | 9.9-7 | 9.9-7	-1.0-7 | -7.7-8 | -1.2-7 | -7.0-8	29 | 29 | 3:45 | 3:09
soybean-large.3 | 308 | 307;	2, 2;934 | 922 | 5993 | 2159	7.2-7 | 8.8-7 | 9.6-7 | 8.5-7	-2.8-7 | -2.1-7 | -5.4-9 | 1.4-7	25 | 24 | 4:47 | 3:54
soybean-large.4 | 308 | 307;	52,52;1506 | 1609 | 13512 | 3831	8.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.4-7 | -2.8-7 | -1.2-7 | -1.6-7	52 | 42 | 10:51 | 7:18
soybean-large.5 | 308 | 307;	2, 2;814 | 850 | 2974 | 1404	9.8-7 | 9.7-7 | 9.9-7 | 9.9-7	-8.4-8 | -9.1-8 | -7.9-8 | -1.7-7	22 | 23 | 2:23 | 2:05
soybean-large.6 | 308 | 307;	0, 0;413 | 413 | 545 | 681	9.4-7 | 9.4-7 | 6.8-7 | 9.1-7	-1.9-7 | -1.9-7 | 3.5-8 | 1.3-6	12 | 12 | 21 | 44
soybean-large.7 | 308 | 307;	2, 2;757 | 1042 | 3443 | 1422	9.2-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.3-8 | -2.5-8 | -1.2-8 | -5.4-8	25 | 29 | 2:44 | 2:10
soybean-large.8 | 308 | 307;	2, 2;726 | 741 | 2294 | 1456	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	-1.8-7 | -1.5-7 | -3.3-8 | 8.0-8	22 | 21 | 1:46 | 1:52
soybean-large.9 | 308 | 307;	6, 6;850 | 948 | 3585 | 2059	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.4-7 | 1.4-7 | -7.1-8 | -5.3-9	24 | 25 | 2:54 | 3:01
soybean-large.10 | 308 | 307;	0, 0;359 | 359 | 434 | 1789	9.5-7 | 9.5-7 | 9.6-7 | 9.7-7	-1.0-7 | -1.0-7 | 8.1-7 | -5.0-7	10 | 11 | 11 | 1:58
soybean-large.11 | 308 | 307;	0, 0;948 | 948 | 1231 | 1609	6.5-7 | 6.5-7 | 9.2-7 | 9.1-7	1.0-6 | 1.0-6 | -2.6-6 | -2.7-6	25 | 26 | 32 | 1:50
spambase-small.2 | 301 | 300;	0, 0;434 | 434 | 993 | 1766	9.4-7 | 9.4-7 | 8.6-7 | 9.3-7	-1.1-6 | -1.1-6 | -1.9-6 | -3.2-7	12 | 12 | 28 | 1:39
spambase-small.3 | 301 | 300;	2, 2;526 | 545 | 672 | 1938	9.7-7 | 9.9-7 | 9.8-7 | 8.9-7	5.1-7 | -5.2-7 | -5.9-7 | -2.9-7	14 | 14 | 22 | 2:06
spambase-small.4 | 301 | 300;	31,31;980 | 1295 | 6559 | 4138	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.2-6 | -2.5-7 | -2.5-7 | -3.5-6	33 | 32 | 4:55 | 3:57
spambase-small.5 | 301 | 300;	0, 0;596 | 604 | 635 | 2852	9.9-7 | 9.9-7 | 8.7-7 | 9.7-7	-2.2-5 | -1.7-5 | -7.2-6 | 8.2-5	16 | 17 | 15 | 2:46
spambase-small.6 | 301 | 300;	8, 8;793 | 795 | 1388 | 2488	9.3-7 | 9.9-7 | 9.9-7 | 9.8-7	-1.2-5 | -1.1-5 | 7.5-7 | 3.2-5	26 | 23 | 50 | 2:22
spambase-small.7 | 301 | 300;	8, 8;842 | 832 | 979 | 2821	9.8-7 | 9.9-7 | 9.9-7 | 9.7-7	2.1-5 | 1.2-5 | 1.1-5 | -9.4-6	27 | 24 | 24 | 2:51
spambase-small.8 | 301 | 300;	1, 1;901 | 1032 | 949 | 3677	9.9-7 | 9.9-7 | 9.9-7 | 9.6-7	6.5-6 | 3.2-6 | -1.3-5 | 3.6-5	26 | 30 | 24 | 3:29
spambase-small.9 | 301 | 300;	8, 8;963 | 1032 | 1089 | 7755	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.2-5 | -1.4-5 | -8.5-6 | -6.9-5	32 | 31 | 27 | 7:36
spambase-small.10 | 301 | 300;	8, 8;1170 | 1146 | 959 | 17646	9.1-7 | 9.9-7 | 9.9-7 | 9.9-7	4.3-5 | -1.3-5 | -1.0-5 | 6.2-5	38 | 34 | 25 | 17:48
spambase-small.11 | 301 | 300;	8, 8;1219 | 1250 | 1369 | 25000	9.9-7 | 9.9-7 | 9.9-7 | **2.6-4**	-6.7-5 | -3.8-5 | -1.4-5 | 2.4-5	37 | 36 | 36 | 24:51
spambase-medium.2 | 901 | 900;	0, 0;574 | 574 | 547 | 3022	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	3.2-6 | 3.2-6 | 6.0-6 | -1.1-5	3:22 | 3:27 | 3:04 | 37:08
spambase-medium.3 | 901 | 900;	2, 2;1306 | 1273 | 4654 | 4358	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.8-7 | -1.0-6 | -9.2-7 | -9.1-7	7:41 | 7:27 | 53:27 | 1:14:39
spambase-medium.4 | 901 | 900;	8, 8;3282 | 2746 | 3386 | 25000	9.9-7 | 9.6-7 | 9.9-7 | **2.1-2**	-2.4-5 | 2.1-5 | 1.8-5 | **-4.0-1**	25:02 | 19:01 | 18:35 | 5:05:33
spambase-medium.5 | 901 | 900;	17,17;2314 | 1725 | 3992 | 5746	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.6-6 | -1.8-6 | -5.5-7 | -1.4-6	19:12 | 12:26 | 45:23 | 1:38:45
spambase-medium.6 | 901 | 900;	8, 8;1241 | 1516 | 3073 | 4000	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.6-6 | 1.3-6 | -2.4-7 | -4.7-7	12:03 | 11:35 | 32:42 | 1:10:59
spambase-medium.7 | 901 | 900;	8, 8;1525 | 1769 | 3802 | 4278	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.4-6 | -1.2-6 | -3.2-7 | -7.9-7	11:43 | 13:06 | 43:38 | 1:17:52
spambase-medium.8 | 901 | 900;	8, 8;1219 | 1620 | 3010 | 3502	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-6 | 2.2-6 | -3.5-7 | 1.6-7	11:46 | 12:10 | 32:40 | 58:58
spambase-medium.9 | 901 | 900;	8, 8;1292 | 1284 | 1709 | 3004	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.3-5 | -1.3-5 | -7.1-6 | 2.7-6	11:11 | 10:38 | 13:41 | 47:54
spambase-medium.10 | 901 | 900;	8, 8;1176 | 1342 | 1436 | 3080	8.8-7 | 9.9-7 | 9.8-7 | 9.8-7	5.9-5 | 7.1-5 | **-1.0-4** | **1.1-4**	10:35 | 11:03 | 9:10 | 38:20
spambase-medium.11 | 901 | 900;	8, 8;1519 | 1409 | 1698 | 25000	9.9-7 | 9.5-7 | 9.8-7 | **4.4-4**	**1.1-4** | -7.9-5 | **-1.3-4** | **6.7-2**	14:26 | 10:58 | 10:22 | 5:05:35
spambase-large.2 | 1501 | 1500;	0, 0;535 | 535 | 992 | 4429	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.3-5 | -1.3-5 | -1.2-5 | -1.3-5	11:07 | 11:17 | 22:17 | 3:12:36
spambase-large.3 | 1501 | 1500;	8, 8;1844 | 1705 | 1830 | 6617	9.9-7 | 9.8-7 | 9.9-7 | 9.9-7	-7.6-6 | -7.6-6 | -6.6-6 | -3.3-6	1:40:31 | 35:47 | 58:10 | 6:13:50
spambase-large.4 | 1501 | 1500;	8, 8;4519 | 3761 | 7091 | 25000	9.9-7 | 9.9-7 | 9.9-7 | **2.2-2**	-2.6-6 | 9.4-8 | -5.2-7 | **-10.0-1**	2:49:39 | 1:19:26 | 5:32:29 | 17:57:38
spambase-large.5 | 1501 | 1500;	8, 8;9184 | 8398 | 7510 | 25000	9.7-7 | 9.9-7 | 9.8-7 | **1.1-2**	-3.0-5 | -2.9-5 | -2.4-5 | **3.0-1**	4:49:37 | 3:26:14 | 3:21:11 | 18:14:24
spambase-large.6 | 1501 | 1500;	8, 8;2798 | 2031 | 2415 | 25000	9.9-7 | 9.9-7 | 9.9-7 | **1.8-2**	4.9-5 | -4.2-5 | -5.8-5 | **-10.0-1**	2:07:59 | 49:32 | 1:07:56 | 17:07:48
spambase-large.7 | 1501 | 1500;	8, 8;2107 | 1596 | 1584 | 6042	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.2-6 | -1.8-5 | -1.0-5 | -1.5-7	1:52:04 | 36:51 | 50:54 | 6:02:07
spambase-large.8 | 1501 | 1500;	8, 8;1498 | 1449 | 1461 | 6050	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.1-5 | -5.0-5 | -9.5-5 | 9.2-5	33:09 | 31:01 | 39:20 | 4:16:11
spambase-large.9 | 1501 | 1500;	8, 8;2158 | 2010 | 1973 | 9832	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	9.4-5 | -9.3-5 | **-1.4-4** | **4.5-4**	1:51:14 | 43:12 | 57:24 | 7:27:54
spambase-large.10 | 1501 | 1500;	8, 8;2429 | 2728 | 2450 | 25000	9.9-7 | 9.7-7 | 9.9-7 | 1.4-5	-4.8-5 | **1.3-4** | **-1.3-4** | **1.8-3**	1:02:04 | 1:00:43 | 1:12:14 | 18:26:46
spambase-large.11 | 1501 | 1500;	8, 8;2164 | 2704 | 2526 | 4532	9.9-7 | 9.7-7 | 9.9-7 | 9.8-7	-8.8-5 | **1.8-4** | **-1.7-4** | **1.5-4**	55:19 | 1:04:55 | 1:08:26 | 3:52:02

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
abalone-small.2 | 201 | 200;	0, 0;384 | 384 | 916 | 664	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.4-6 | 1.4-6 | -4.2-7 | 4.2-7	05 | 05 | 14 | 19
abalone-small.3 | 201 | 200;	0, 0;268 | 268 | 295 | 318	9.8-7 | 9.8-7 | 9.8-7 | 9.9-7	-1.0-5 | -1.0-5 | 1.5-6 | -6.2-6	03 | 03 | 03 | 09
abalone-small.4 | 201 | 200;	0, 0;486 | 486 | 818 | 799	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.2-7 | -6.2-7 | 1.8-7 | -4.9-6	07 | 07 | 11 | 21
abalone-small.5 | 201 | 200;	0, 0;554 | 554 | 808 | 1337	9.9-7 | 9.9-7 | 9.8-7 | 9.9-7	-5.1-6 | -5.1-6 | -9.9-6 | -7.2-6	06 | 06 | 09 | 37
abalone-small.6 | 201 | 200;	0, 0;523 | 523 | 736 | 1581	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.6-5 | -1.6-5 | -4.4-5 | -3.5-5	07 | 07 | 07 | 42
abalone-small.7 | 201 | 200;	8, 8;1012 | 1005 | 1428 | 2832	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.3-5 | -1.1-5 | 3.6-5 | -2.5-5	13 | 12 | 14 | 1:17
abalone-small.8 | 201 | 200;	8, 8;1054 | 1103 | 1367 | 2810	9.8-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.5-5 | -2.9-5 | 5.4-5 | -8.1-5	16 | 15 | 14 | 1:14
abalone-small.9 | 201 | 200;	8, 8;1076 | 1263 | 1421 | 3185	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.6-5 | -7.8-5 | -2.3-5 | **-1.3-4**	14 | 15 | 15 | 1:28
abalone-small.10 | 201 | 200;	8, 8;2085 | 1770 | 1701 | 4954	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	-5.6-5 | -6.2-5 | **-2.3-4** | 4.8-6	30 | 21 | 17 | 2:13
abalone-small.11 | 201 | 200;	8, 8;1776 | 1106 | 1760 | 4504	9.9-7 | 9.9-7 | 9.8-7 | 9.8-7	-6.9-5 | -5.9-5 | **1.4-4** | **-1.7-4**	26 | 14 | 18 | 2:05
abalone-medium.2 | 401 | 400;	3, 3;500 | 502 | 539 | 782	9.5-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.7-6 | -6.8-8 | 5.6-7 | -4.0-7	26 | 25 | 26 | 1:33
abalone-medium.3 | 401 | 400;	5, 5;611 | 617 | 2599 | 1362	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.2-6 | 6.4-7 | -5.3-7 | -2.5-7	32 | 30 | 3:48 | 4:14
abalone-medium.4 | 401 | 400;	0, 0;378 | 378 | 506 | 390	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	4.0-7 | 4.0-7 | -3.7-7 | -5.5-6	19 | 19 | 24 | 48
abalone-medium.5 | 401 | 400;	0, 0;578 | 578 | 798 | 839	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.5-6 | -2.5-6 | -8.6-7 | -5.1-6	31 | 31 | 41 | 1:58
abalone-medium.6 | 401 | 400;	0, 0;608 | 608 | 892 | 1065	9.8-7 | 9.8-7 | 9.9-7 | 9.9-7	-1.3-5 | -1.3-5 | -4.1-5 | -3.0-5	37 | 37 | 42 | 2:03
abalone-medium.7 | 401 | 400;	8, 8;1084 | 1159 | 1516 | 1981	9.6-7 | 9.7-7 | 9.7-7 | 9.5-7	-1.5-5 | -9.2-6 | -6.6-6 | -2.6-5	1:08 | 1:06 | 1:26 | 4:00
abalone-medium.8 | 401 | 400;	8, 8;981 | 957 | 1062 | 1617	9.8-7 | 9.6-7 | 9.9-7 | 8.0-7	-4.9-6 | -7.5-6 | 4.1-5 | 4.8-5	1:00 | 54 | 53 | 3:04
abalone-medium.9 | 401 | 400;	8, 8;1063 | 1213 | 1455 | 2876	9.7-7 | 9.8-7 | 9.9-7 | 9.9-7	-1.8-5 | -7.9-6 | 2.0-5 | -5.4-5	1:14 | 1:16 | 1:11 | 5:39
abalone-medium.10 | 401 | 400;	8, 8;1328 | 1489 | 1777 | 4120	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.4-5 | -5.5-5 | -4.3-5 | -8.2-5	1:24 | 1:27 | 1:25 | 7:48
abalone-medium.11 | 401 | 400;	8, 8;1212 | 1402 | 1682 | 3361	9.9-7 | 9.8-7 | 9.9-7 | 9.9-7	-6.7-5 | -6.2-5 | -8.4-5 | -7.4-5	1:21 | 1:24 | 1:25 | 6:42
abalone-large.2 | 1001 | 1000;	0, 0;576 | 576 | 650 | 1493	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	1.2-5 | 1.2-5 | 6.6-6 | -1.4-6	5:01 | 5:07 | 5:08 | 31:13
abalone-large.3 | 1001 | 1000;	21,21;762 | 765 | 796 | 1306	9.2-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.1-6 | -3.6-6 | -9.9-7 | -4.2-6	7:29 | 6:09 | 8:56 | 22:21
abalone-large.4 | 1001 | 1000;	0, 0;545 | 545 | 629 | 710	9.9-7 | 9.9-7 | 9.6-7 | 9.9-7	1.9-6 | 1.9-6 | -6.9-6 | -9.2-7	6:43 | 6:50 | 5:01 | 12:03
abalone-large.5 | 1001 | 1000;	38,38;797 | 834 | 1107 | 833	9.5-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.2-5 | -1.5-5 | -2.1-5 | -2.1-5	11:45 | 8:39 | 9:11 | 14:17
abalone-large.6 | 1001 | 1000;	8, 8;781 | 796 | 1101 | 950	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.4-5 | -1.4-5 | -1.8-5 | -1.9-5	9:12 | 8:21 | 8:49 | 15:24
abalone-large.7 | 1001 | 1000;	8, 8;1104 | 1089 | 1388 | 1230	9.9-7 | 9.9-7 | 9.9-7 | 9.8-7	-1.5-5 | -2.1-5 | -2.7-6 | -1.8-5	12:09 | 10:57 | 11:52 | 25:24
abalone-large.8 | 1001 | 1000;	8, 8;1024 | 1066 | 1376 | 1480	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.4-5 | -5.3-5 | -6.3-5 | **-1.0-4**	11:58 | 11:32 | 11:22 | 24:22
abalone-large.9 | 1001 | 1000;	8, 8;1337 | 1611 | 1980 | 2578	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.1-5 | -3.7-5 | -9.5-5 | -6.9-5	16:07 | 16:46 | 16:36 | 45:58
abalone-large.10 | 1001 | 1000;	8, 8;1761 | 1855 | 2022 | 3093	8.4-7 | 9.8-7 | 8.6-7 | 9.9-7	-1.8-5 | -2.2-5 | -6.1-5 | -9.2-5	16:38 | 16:45 | 16:25 | 50:13
abalone-large.11 | 1001 | 1000;	8, 8;1969 | 2212 | 2604 | 3118	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.7-5 | -4.1-5 | 9.9-6 | -4.7-5	18:04 | 19:27 | 21:44 | 55:26
segment-small.2 | 401 | 400;	8, 8;1916 | 1825 | 11613 | 4663	9.2-7 | 9.1-7 | 9.9-7 | 9.4-7	-4.6-7 | 2.3-7 | -2.4-8 | 1.2-7	1:41 | 1:31 | 16:59 | 12:12
segment-small.3 | 401 | 400;	60,60;1696 | 1628 | 15740 | 4433	9.1-7 | 9.9-7 | 9.9-7 | 9.9-7	-3.1-7 | -3.8-7 | -2.7-7 | -2.8-7	1:56 | 1:24 | 24:31 | 13:16
segment-small.4 | 401 | 400;	6, 6;1233 | 1303 | 7910 | 3532	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.3-7 | -6.5-7 | -2.5-7 | -4.5-7	1:07 | 1:09 | 12:04 | 10:01
segment-small.5 | 401 | 400;	90,90;2676 | 2603 | 25000 | 7183	8.9-7 | 9.9-7 | 1.4-6 | 9.9-7	-1.5-6 | -1.7-6 | -1.0-6 | -1.1-6	3:10 | 2:26 | 41:39 | 24:24
segment-small.6 | 401 | 400;	17,17;1956 | 1989 | 21361 | 5225	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.7-7 | -8.5-7 | -4.9-7 | -8.1-7	1:59 | 1:50 | 34:38 | 16:50
segment-small.7 | 401 | 400;	12,12;980 | 1047 | 5991 | 2638	8.3-7 | 9.9-7 | 9.9-7 | 9.9-7	2.6-8 | -5.0-8 | -2.1-7 | -4.8-7	1:02 | 59 | 9:37 | 7:22
segment-small.8 | 401 | 400;	20,20;1116 | 1318 | 7160 | 2929	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.6-6 | -1.8-6 | -3.7-8 | -1.0-6	1:20 | 1:18 | 11:32 | 7:37
segment-small.9 | 401 | 400;	4, 4;844 | 838 | 3506 | 1874	8.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.2-6 | -1.7-6 | -1.5-7 | -2.3-6	56 | 54 | 5:32 | 4:34
segment-small.10 | 401 | 400;	32,32;986 | 1206 | 8018 | 2778	9.1-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.6-7 | -5.7-7 | -1.2-7 | -8.0-7	1:25 | 1:19 | 13:11 | 7:49
segment-small.11 | 401 | 400;	16,16;1290 | 1331 | 7216 | 2772	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-9.4-7 | -8.5-7 | -1.4-7 | -5.5-7	1:33 | 1:25 | 12:10 | 7:42
segment-medium.2 | 701 | 700;	8, 8;1143 | 1090 | 923 | 1602	9.9-7 | 9.7-7 | 9.5-7 | 9.6-7	-3.0-6 | 3.8-6 | -4.1-6 | 9.2-7	4:07 | 3:39 | 2:55 | 12:29
segment-medium.3 | 701 | 700;	2, 2;737 | 706 | 652 | 1794	9.6-7 | 9.3-7 | 9.2-7 | 9.9-7	-3.0-6 | -2.1-6 | 1.8-6 | -8.4-7	2:36 | 2:29 | 1:58 | 13:59
segment-medium.4 | 701 | 700;	8, 8;1889 | 2166 | 18449 | 5876	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.0-7 | -4.9-7 | -3.9-7 | -4.3-7	6:28 | 6:56 | 2:00:11 | 1:08:15

Table 4: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ_+, FAP, QAP, BIQ and RCP problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
segment-medium.5 | 701 | 700;	8, 8;2163 | 2455 | 19871 | 6655	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-8.3-7 | -8.4-7 | -5.4-7 | -7.1-7	8:15 | 7:55 | 2:11:27 | 1:23:14
segment-medium.6 | 701 | 700;	2, 2;2861 | 3070 | 25000 | 8859	9.9-7 | 9.9-7 | 1.7-6 | 9.9-7	-1.4-6 | -1.4-6 | -1.4-6 | -1.0-6	9:23 | 10:10 | 2:45:00 | 1:54:53
segment-medium.7 | 701 | 700;	4, 4;3112 | 3339 | 25000 | 9603	9.9-7 | 9.1-7 | 1.5-6 | 9.9-7	-1.8-6 | -1.4-6 | -1.5-6 | -1.2-6	10:41 | 11:22 | 2:47:46 | 1:58:45
segment-medium.8 | 701 | 700;	2, 2;2824 | 3099 | 25000 | 9757	9.0-7 | 9.9-7 | 1.0-6 | 9.9-7	-1.4-6 | -2.0-6 | -7.2-7 | -1.2-6	8:45 | 9:37 | 2:46:33 | 1:55:47
segment-medium.9 | 701 | 700;	8, 8;2390 | 2373 | 2755 | 6829	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.4-6 | -1.9-6 | -4.1-7 | -8.7-7	7:30 | 7:18 | 12:34 | 1:06:28
segment-medium.10 | 701 | 700;	2, 2;1779 | 1818 | 1813 | 5099	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.3-6 | 1.6-7 | 7.6-8 | -1.7-7	5:30 | 5:26 | 6:43 | 48:39
segment-medium.11 | 701 | 700;	8, 8;1722 | 1593 | 1676 | 25000	9.7-7 | 9.9-7 | 9.9-7 | **1.4-4**	-5.8-6 | 6.7-6 | 7.5-6 | **-1.5-4**	8:32 | 4:54 | 5:53 | 3:05:45
segment-large.2 | 1001 | 1000;	8, 8;1191 | 1264 | 1080 | 1745	9.9-7 | 9.9-7 | 9.8-7 | 9.9-7	4.6-6 | 5.0-6 | -4.7-6 | -5.0-7	9:16 | 9:15 | 8:27 | 34:22
segment-large.3 | 1001 | 1000;	0, 0;373 | 373 | 412 | 1956	9.9-7 | 9.9-7 | 9.8-7 | 9.9-7	1.8-6 | 1.8-6 | -7.1-7 | -1.1-6	2:43 | 2:41 | 3:33 | 37:08
segment-large.4 | 1001 | 1000;	2, 2;1879 | 2024 | 19479 | 6354	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-5.8-7 | -5.5-7 | -4.5-7 | -5.0-7	13:52 | 14:50 | 5:23:13 | 3:07:06
segment-large.5 | 1001 | 1000;	8, 8;2449 | 2711 | 22003 | 8257	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-6.2-7 | -6.7-7 | -6.0-7 | -6.4-7	19:06 | 20:31 | 6:09:59 | 4:19:44
segment-large.6 | 1001 | 1000;	8, 8;3158 | 3262 | 25000 | 10211	9.9-7 | 9.9-7 | 1.3-6 | 9.9-7	-1.5-6 | -1.5-6 | -9.6-7 | -1.0-6	24:00 | 24:06 | 7:10:04 | 5:25:59
segment-large.7 | 1001 | 1000;	8, 8;3613 | 3600 | 25000 | 11657	9.9-7 | 9.9-7 | 1.8-6 | 9.9-7	-1.8-6 | -1.3-6 | -1.9-6 | -1.3-6	28:07 | 27:48 | 7:15:10 | 6:13:44
segment-large.8 | 1001 | 1000;	8, 8;2950 | 3161 | 20284 | 9511	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.1-6 | -1.1-6 | -9.4-7 | -1.1-6	23:46 | 24:42 | 5:46:25 | 5:15:17
segment-large.9 | 1001 | 1000;	8, 8;2452 | 2383 | 12121 | 8064	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.0-6 | -1.9-6 | -5.3-7 | -1.1-6	19:23 | 18:03 | 3:23:40 | 4:10:03
segment-large.10 | 1001 | 1000;	8, 8;1871 | 1789 | 1676 | 4527	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-2.9-7 | -3.1-7 | -6.1-6 | -3.0-7	14:38 | 13:42 | 13:51 | 1:53:18
segment-large.11 | 1001 | 1000;	8, 8;1887 | 1683 | 1827 | 25000	9.9-7 | 9.9-7 | 9.9-7 | 2.9-5	-1.9-6 | -1.9-6 | 6.0-6 | **1.1-4**	20:26 | 13:07 | 15:29 | 6:50:17
housing.2 | 507 | 506;	8, 8;3373 | 3284 | 2679 | 2566	9.9-7 | 9.6-7 | 9.9-7 | 8.6-7	-5.9-6 | -5.4-6 | -5.2-6 | -5.3-6	4:50 | 4:31 | 3:26 | 7:52
housing.3 | 507 | 506;	8, 8;1576 | 1247 | 1523 | 1338	9.7-7 | 9.9-7 | 9.9-7 | 9.8-7	1.7-6 | 8.0-6 | -6.7-6 | 5.2-6	3:20 | 1:34 | 1:56 | 4:29
housing.4 | 507 | 506;	8, 8;1645 | 1368 | 1064 | 1090	9.9-7 | 9.9-7 | 9.9-7 | 8.4-7	-4.0-6 | -3.5-6 | -4.9-6 | 8.3-5	2:50 | 2:00 | 1:25 | 3:40
housing.5 | 507 | 506;	8, 8;1918 | 1319 | 1916 | 1451	9.9-7 | 9.6-7 | 9.3-7 | 8.8-7	3.3-5 | -3.2-5 | 3.6-5 | 6.3-5	3:30 | 2:07 | 2:36 | 5:03
housing.6 | 507 | 506;	11,11;533 | 536 | 842 | 1958	9.9-7 | 9.9-7 | 9.8-7 | 9.5-7	-1.2-6 | -9.7-6 | 5.9-6 | 6.3-5	1:06 | 53 | 1:20 | 6:29
housing.7 | 507 | 506;	8, 8;703 | 645 | 856 | 2235	9.9-7 | 9.9-7 | 9.8-7 | 9.9-7	-2.8-5 | -2.6-5 | -4.6-5 | -7.5-5	1:29 | 1:06 | 1:15 | 7:35
housing.8 | 507 | 506;	0, 0;638 | 638 | 924 | 1700	9.8-7 | 9.8-7 | 9.7-7 | 9.5-7	-1.9-5 | -1.9-5 | -1.3-5 | -5.6-5	1:06 | 1:05 | 1:23 | 5:40
housing.9 | 507 | 506;	0, 0;794 | 794 | 1173 | 2466	9.5-7 | 9.5-7 | 9.8-7 | 9.9-7	-3.7-5 | -3.7-5 | 3.7-5 | 3.8-5	1:27 | 1:27 | 1:43 | 8:23
housing.10 | 507 | 506;	8, 8;927 | 1016 | 1275 | 25000	9.9-7 | 9.9-7 | 9.9-7 | 6.4-5	-4.5-5 | -1.7-5 | -2.6-5 | **2.2-3**	1:38 | 1:40 | 1:57 | 1:18:42
housing.11 | 507 | 506;	8, 8;813 | 844 | 1310 | 25000	9.9-7 | 9.9-7 | 9.6-7 | 6.7-5	-2.5-5 | -2.9-5 | -2.5-5 | **-7.4-3**	1:31 | 1:24 | 1:54 | 1:20:22

Table 5: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ and R1TA problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
theta4 | 1949 | 200;	13,13;153 | 316 | 294 | 680	6.5-7 | 9.7-7 | 9.6-7 | 9.9-7	3.2-8 | -1.3-6 | -5.9-7 | 1.5-6	04 | 05 | 04 | 12
theta42 | 5986 | 200;	20,20;82 | 178 | 151 | 315	6.0-7 | 9.9-7 | 9.9-7 | 9.8-7	-1.4-7 | -1.0-7 | 2.7-7 | 6.3-7	05 | 03 | 03 | 06
theta6 | 4375 | 300;	12,12;163 | 341 | 306 | 561	9.9-7 | 8.4-7 | 9.5-7 | 9.9-7	1.6-8 | 1.7-6 | -1.1-6 | 1.7-6	09 | 13 | 10 | 24
theta62 | 13390 | 300;	13,13;82 | 190 | 125 | 311	6.7-7 | 9.7-7 | 9.6-7 | 9.9-7	-2.4-7 | 7.5-9 | 1.1-6 | 1.2-6	07 | 08 | 06 | 14
theta8 | 7905 | 400;	12,12;183 | 364 | 321 | 413	4.4-7 | 9.9-7 | 8.3-7 | 9.9-7	-5.8-8 | -2.1-6 | 9.8-7 | 1.0-6	18 | 28 | 21 | 34
theta82 | 23872 | 400;	11,11;87 | 163 | 126 | 304	4.5-7 | 9.8-7 | 9.7-7 | 9.7-7	-7.6-8 | 3.8-7 | 2.0-6 | 1.3-6	13 | 14 | 12 | 26
theta83 | 39862 | 400;	23,23;64 | 157 | 110 | 290	9.8-7 | 9.2-7 | 9.2-7 | 9.8-7	-4.1-7 | -1.1-7 | 2.7-7 | 1.8-6	23 | 14 | 13 | 26
theta10 | 12470 | 500;	11,11;200 | 396 | 333 | 422	7.6-7 | 9.1-7 | 9.9-7 | 9.8-7	6.7-8 | -2.1-6 | -1.4-6 | 1.2-6	32 | 51 | 36 | 59
theta102 | 37467 | 500;	11,11;84 | 159 | 127 | 312	6.8-7 | 9.1-7 | 9.2-7 | 9.9-7	-9.3-8 | 1.3-6 | 1.7-6 | 1.6-6	21 | 22 | 21 | 47

Table 5: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ and R1TA problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
theta103 | 62516 | 500;	20,20;64 | 144 | 104 | 300	8.1-7 | 9.7-7 | 9.9-7 | 9.8-7	-4.1-8 | -6.2-8 | 2.0-7 | 2.0-6	38 | 20 | 21 | 45
theta104 | 87245 | 500;	43,47;63 | 151 | 116 | 342	4.4-7 | 9.0-7 | 9.5-7 | 9.8-7	-5.5-7 | -2.4-8 | 8.3-7 | 3.2-6	53 | 22 | 19 | 51
theta12 | 17979 | 600;	13,13;200 | 413 | 358 | 444	3.7-7 | 8.4-7 | 8.5-7 | 9.9-7	5.6-8 | 2.1-6 | 1.0-6 | 1.1-6	51 | 1:24 | 1:02 | 1:38
theta123 | 90020 | 600;	12,12;70 | 157 | 105 | 325	7.1-7 | 9.2-7 | 9.2-7 | 9.7-7	1.9-8 | -6.8-8 | 2.2-7 | 2.5-6	36 | 35 | 34 | 1:19
san200-0.7-1 | 5971 | 200;	11,11;220 | 3421 | 5869 | 139	7.7-7 | 8.8-7 | 9.9-7 | 9.7-7	2.7-6 | -1.1-5 | 2.4-6 | 2.9-6	04 | 27 | 46 | 02
sanr200-0.7 | 6033 | 200;	14,14;82 | 183 | 159 | 284	5.1-7 | 9.9-7 | 9.3-7 | 9.8-7	9.4-9 | 2.0-7 | -2.0-7 | 8.2-7	03 | 03 | 03 | 05
c-fat200-1 | 18367 | 200;	25,31;90 | 242 | 448 | 348	8.4-7 | 8.8-7 | 9.9-7 | 9.9-7	-5.9-7 | 3.2-6 | -3.5-6 | 2.0-6	04 | 03 | 06 | 04
hamming-8-4 | 11777 | 256;	5, 5;72 | 167 | 123 | 372	1.4-7 | 5.8-7 | 7.6-7 | 9.2-7	-7.8-8 | 3.1-6 | 2.2-6 | -1.3-5	02 | 03 | 03 | 07
hamming-9-8 | 2305 | 512;	12,12;200 | 2635 | 3129 | 1276	2.5-7 | 9.8-7 | 9.7-7 | 9.4-7	-9.2-8 | -1.2-5 | 5.6-7 | -5.8-6	21 | 3:17 | 4:07 | 2:02
hamming-10-2 | 23041 | 1024;	10,10;200 | 667 | 731 | 1066	4.8-7 | 6.9-7 | 9.6-7 | 9.9-7	-5.9-7 | -1.5-5 | 2.2-6 | 2.5-5	2:54 | 7:19 | 9:39 | 12:05
hamming-7-5-6 | 1793 | 128;	5, 5;232 | 530 | 563 | 249	7.7-8 | 7.2-7 | 9.9-7 | 9.4-7	-3.0-8 | 4.1-6 | 6.8-7 | -3.1-6	02 | 02 | 02 | 01
hamming-8-3-4 | 16129 | 256;	9, 9;83 | 246 | 196 | 180	3.9-7 | 9.9-7 | 7.0-7 | 9.0-7	1.1-9 | 2.0-7 | -7.3-7 | -3.5-6	03 | 05 | 04 | 03
hamming-9-5-6 | 53761 | 512;	6, 6;200 | 1022 | 1215 | 197	6.2-7 | 8.8-7 | 9.8-7 | 8.8-7	-1.7-7 | -1.1-5 | -1.8-6 | -5.1-6	20 | 1:24 | 1:36 | 20
brock200-1 | 5067 | 200;	14,14;91 | 201 | 161 | 305	3.3-7 | 9.6-7 | 9.3-7 | 9.9-7	-8.0-9 | 1.4-7 | -2.2-7 | 9.8-7	03 | 03 | 03 | 06
brock200-4 | 6812 | 200;	14,14;76 | 172 | 133 | 275	9.8-7 | 9.9-7 | 9.9-7 | 9.7-7	-6.4-9 | 1.4-7 | 3.2-8 | 1.1-6	03 | 03 | 03 | 05
brock400-1 | 20078 | 400;	13,13;90 | 194 | 156 | 311	2.5-7 | 9.6-7 | 9.4-7 | 9.9-7	-8.0-8 | -4.3-7 | 1.1-6 | 1.3-6	13 | 15 | 13 | 27
keller4 | 5101 | 171;	13,13;68 | 212 | 260 | 350	4.6-7 | 9.8-7 | 9.9-7 | 9.8-7	7.8-8 | 8.1-8 | -9.9-7 | 8.8-7	02 | 02 | 04 | 04
p-hat300-1 | 33918 | 300;	86,128;69 | 667 | 865 | 937	6.0-7 | 9.9-7 | 9.9-7 | 9.9-7	3.5-7 | -1.1-7 | 1.3-6 | 1.8-6	58 | 27 | 38 | 39
G43 | 9991 | 1000;	27,27;200 | 1237 | 1097 | 962	9.8-7 | 9.4-7 | 9.8-7 | 9.9-7	8.9-7 | -3.5-6 | -1.8-6 | 2.0-6	3:32 | 9:54 | 9:13 | 12:49
G44 | 9991 | 1000;	30,30;200 | 1236 | 1110 | 996	6.1-7 | 9.7-7 | 9.3-7 | 9.9-7	5.9-9 | -3.6-6 | -8.8-7 | 1.6-6	3:48 | 9:57 | 9:15 | 13:17
G45 | 9991 | 1000;	26,26;200 | 1261 | 1120 | 1007	6.4-7 | 9.9-7 | 9.6-7 | 9.9-7	3.8-8 | 3.2-6 | 1.8-6 | 1.6-6	3:31 | 10:04 | 9:21 | 13:35
G46 | 9991 | 1000;	28,30;200 | 1284 | 1142 | 974	7.9-7 | 9.6-7 | 9.9-7 | 9.9-7	6.2-8 | -3.1-6 | -1.6-6 | 1.3-6	3:49 | 10:11 | 9:21 | 12:55
G47 | 9991 | 1000;	30,31;200 | 1267 | 1088 | 1030	3.7-7 | 9.3-7 | 9.5-7 | 9.9-7	1.5-7 | 2.8-6 | 8.9-7 | 1.2-6	3:52 | 9:59 | 8:51 | 13:47
G51 | 5910 | 1000;	148,584;200 | 6151 | 10210 | 8746	7.3-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.9-8 | -1.7-7 | 8.6-8 | 1.9-7	41:06 | 53:54 | 1:33:48 | 1:55:48
G52 | 5917 | 1000;	458,1619;200 | 25000 | 25000 | 25000	9.3-7 | 1.6-6 | 3.5-6 | 2.9-6	2.0-6 | 7.1-6 | 1.4-5 | 1.5-5	3:53:19 | 3:24:55 | 3:45:22 | 5:38:42
G53 | 5915 | 1000;	425,1183;200 | 25000 | 25000 | 25000	9.9-7 | 1.5-6 | 3.7-6 | 3.7-6	1.4-6 | 5.9-6 | 1.5-5 | 1.8-5	2:16:35 | 3:12:47 | 3:24:18 | 5:30:23
G54 | 5917 | 1000;	123,462;200 | 3892 | 5633 | 5398	9.3-7 | 9.9-7 | 9.9-7 | 9.9-7	4.2-8 | -2.8-6 | 3.3-7 | 3.2-7	23:17 | 33:11 | 49:11 | 1:13:51
1dc.128 | 1472 | 128;	111,186;231 | 9243 | 25000 | 19888	9.8-7 | 9.8-7 | 5.8-6 | 9.5-7	1.2-6 | 5.4-6 | 9.3-6 | 3.1-6	19 | 58 | 2:48 | 2:11
1et.128 | 673 | 128;	13,13;140 | 312 | 354 | 569	5.5-7 | 8.0-7 | 8.6-7 | 9.3-7	-6.9-7 | 3.5-6 | -1.6-6 | -1.5-6	02 | 02 | 03 | 03
1tc.128 | 513 | 128;	11,11;205 | 875 | 993 | 442	1.9-7 | 9.9-7 | 9.8-7 | 9.8-7	7.5-8 | 3.9-6 | 7.0-8 | -5.5-7	02 | 03 | 04 | 03
1zc.128 | 1121 | 128;	12,12;103 | 201 | 185 | 394	4.1-7 | 6.9-7 | 9.5-7 | 9.7-7	2.3-7 | -2.0-6 | -1.8-6 | 6.0-6	02 | 01 | 02 | 02
1dc.256 | 3840 | 256;	60,83;220 | 7734 | 6283 | 1775	7.3-9 | 9.1-7 | 9.6-7 | 9.2-7	-7.1-9 | -1.3-5 | 2.9-6 | -1.5-6	20 | 2:40 | 1:38 | 47
1et.256 | 1665 | 256;	44,66;220 | 1397 | 2801 | 2744	7.5-7 | 9.9-7 | 9.9-7 | 9.9-7	1.1-6 | 3.2-7 | 7.2-7 | 1.5-6	23 | 32 | 1:01 | 1:00
1tc.256 | 1313 | 256;	81,169;220 | 3525 | 5351 | 7499	9.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.8-7 | 3.7-7 | 2.2-7 | 5.9-7	1:02 | 1:10 | 1:51 | 3:04
1zc.256 | 2817 | 256;	17,17;135 | 449 | 262 | 354	5.4-7 | 9.9-7 | 8.3-7 | 9.1-7	2.4-8 | -5.1-10 | 2.3-6 | 5.6-6	06 | 12 | 07 | 07
1dc.512 | 9728 | 512;	82,156;200 | 5045 | 10015 | 13778	8.3-7 | 9.9-7 | 9.9-7 | 9.9-7	1.9-6 | 4.0-6 | 3.8-6 | 3.7-6	4:26 | 8:42 | 17:30 | 27:38
1et.512 | 4033 | 512;	48,73;200 | 2059 | 4068 | 6297	8.1-7 | 9.8-7 | 9.9-7 | 9.9-7	-1.7-6 | 3.2-7 | 2.5-6 | -1.4-6	1:42 | 3:35 | 6:34 | 13:53
1tc.512 | 3265 | 512;	85,238;200 | 6646 | 18344 | 25000	9.3-7 | 9.9-7 | 9.8-7 | 3.9-6	2.0-6 | 2.3-6 | 2.0-6 | 1.9-5	10:29 | 13:55 | 39:40 | 53:59
2dc.512 | 54896 | 512;	114,322;200 | 4596 | 11776 | 16009	9.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.2-9 | 3.2-6 | 1.3-5 | 1.3-5	19:54 | 9:32 | 42:13 | 37:04
1zc.512 | 6913 | 512;	15,15;200 | 497 | 434 | 697	4.2-7 | 7.3-7 | 9.4-7 | 9.9-7	-8.5-8 | -2.7-6 | 2.5-6 | -3.3-6	34 | 50 | 1:15 | 1:16
1dc.1024 | 24064 | 1024;	48,74;200 | 5077 | 9728 | 15069	9.1-7 | 9.9-7 | 9.9-7 | 9.9-7	3.4-6 | 4.2-6 | 4.9-6 | 4.0-6	14:32 | 50:49 | 1:31:42 | 3:03:20
1et.1024 | 9601 | 1024;	64,129;200 | 3956 | 10174 | 17252	5.9-7 | 9.9-7 | 9.9-7 | 9.9-7	2.2-6 | 3.1-6 | 3.0-6 | 2.7-6	35:33 | 50:14 | 1:45:03 | 3:53:32
1tc.1024 | 7937 | 1024;	156,417;200 | 5775 | 25000 | 18474	7.5-7 | 9.9-7 | 2.3-6 | 9.9-7	8.9-7 | 3.8-6 | 3.3-6 | 2.3-6	1:22:24 | 54:35 | 4:13:43 | 3:47:44

Table 5: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ and R1TA problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
1zc.1024 | 16641 | 1024;	16,16;200 | 884 | 734 | 4488	8.4-7 | 9.7-7 | 9.2-7 | 9.6-7	2.7-8 | 6.9-7 | 1.6-6 | 2.4-5	4:56 | 12:44 | 8:49 | 49:10
2dc.1024 | 169163 | 1024;	148,376;200 | 6951 | 14316 | 23007	9.2-7 | 9.9-7 | 9.9-7 | 9.9-7	7.8-6 | 3.1-5 | 2.6-5 | 2.6-5	2:21:20 | 1:24:20 | 4:20:36 | 5:32:26
1dc.2048 | 58368 | 2048;	62,112;200 | 5520 | 12938 | 20527	9.7-7 | 9.9-7 | 9.9-7 | 9.9-7	5.5-6 | 6.6-6 | 6.7-6 | 6.8-6	1:55:31 | 6:10:05 | 14:00:08 | 28:29:05
1et.2048 | 22529 | 2048;	228,658;200 | 3601 | 13985 | 25000	8.7-7 | 9.9-7 | 9.9-7 | **6.1-3**	3.9-6 | 4.3-6 | 4.2-6 | **2.2-2**	5:29:46 | 3:59:47 | 17:25:13 | 40:08:45
1tc.2048 | 18945 | 2048;	509,1725;200 | 6574 | 20819 | 25000	8.2-7 | 9.9-7 | 9.9-7 | 1.2-6	9.9-7 | 4.8-6 | 3.8-6 | 5.5-6	22:10:45 | 7:26:56 | 23:37:33 | 39:35:04
2dc.2048 | 504452 | 2048;	167,385;200 | 6293 | 25000 | 16945	9.8-7 | 9.9-7 | 3.7-6 | 9.9-7	1.8-5 | 2.0-5 | 3.5-5 | 2.8-5	14:22:06 | 8:52:47 | 47:15:41 | 28:09:34
nonsym(5,4) | 3374 | 125;	9, 9;250 | 2016 | 2183 | 15071	6.5-7 | 9.8-7 | 9.9-7 | 9.9-7	9.0-7 | -1.3-5 | -1.0-5 | 9.9-6	02 | 07 | 07 | 2:29
nonsym(6,4) | 9260 | 216;	15,15;220 | 3364 | 4832 | 25000	8.7-7 | 9.9-7 | 9.7-7 | **1.6-3**	-1.0-5 | 1.8-5 | 1.2-5 | **-8.9-3**	05 | 32 | 45 | 10:31
nonsym(7,4) | 21951 | 343;	10,10;200 | 5427 | 6384 | 25000	1.7-7 | 9.0-7 | 9.8-7 | **2.2-2**	-2.7-6 | -3.0-6 | -1.4-5 | **5.8-1**	11 | 2:31 | 2:59 | 28:43
nonsym(8,4) | 46655 | 512;	13,13;200 | 6927 | 6871 | 25000	1.5-7 | 8.7-7 | 9.9-7 | **1.9-2**	-4.1-7 | 5.7-6 | 2.1-5 | **6.2-1**	29 | 8:40 | 8:54 | 1:10:07
nonsym(9,4) | 91124 | 729;	25,33;200 | 25000 | 4584 | 25000	4.2-7 | 3.2-5 | 9.7-7 | **1.9-2**	7.4-6 | **5.2-4** | -1.7-5 | **4.2-3**	2:00 | 1:18:21 | 14:29 | 2:41:00
nonsym(10,4) | 166374 | 1000;	17,21;200 | 25000 | 6711 | 25000	7.9-7 | 2.8-5 | 9.9-7 | **1.6-2**	-2.5-6 | **-1.9-4** | 2.6-5 | **6.2-1**	3:37 | 2:57:30 | 48:32 | 5:52:44
nonsym(11,4) | 287495 | 1331;	19,22;200 | 25000 | 16627 | 25000	2.5-7 | **1.3-3** | 9.9-7 | **9.9-3**	7.5-6 | **5.1-2** | 3.0-5 | **-2.2-1**	7:14 | 6:30:10 | 4:57:08 | 12:51:58
nonsym(3,5) | 1295 | 81;	41,46;133 | 1355 | 1373 | 3897	7.6-7 | 9.7-7 | 9.2-7 | 9.9-7	-4.5-6 | -2.3-6 | -6.4-6 | 4.7-6	03 | 03 | 03 | 23
nonsym(4,5) | 9999 | 256;	24,31;220 | 3962 | 6644 | 25000	6.7-7 | 9.9-7 | 9.9-7 | **4.0-4**	-7.8-6 | -1.6-5 | 1.3-5 | **-4.5-3**	11 | 56 | 1:31 | 14:29
nonsym(5,5) | 50624 | 625;	30,31;200 | 12638 | 4918 | 25000	2.4-7 | 9.6-7 | 9.9-7 | **2.5-3**	3.7-6 | 9.0-6 | 1.8-5 | **-4.8-2**	1:18 | 27:19 | 10:10 | 1:50:10
nonsym(6,5) | 194480 | 1296;	26,28;200 | 25000 | 11981 | 25000	6.6-7 | **1.6-4** | 9.9-7 | **1.6-3**	2.0-5 | **-3.0-3** | -2.8-5 | **-4.9-2**	6:39 | 5:57:28 | 2:59:30 | 11:24:24
sym_rd(3,20) | 10625 | 231;	22,22;61 | 1279 | 1647 | 1979	7.6-7 | 9.6-7 | 9.4-7 | 9.5-7	8.9-6 | -2.9-6 | -9.5-6 | 5.7-6	06 | 15 | 19 | 1:02
sym_rd(3,25) | 23750 | 351;	20,20;72 | 1551 | 1665 | 2016	4.7-7 | 9.3-7 | 9.4-7 | 9.9-7	-1.1-6 | 4.6-7 | -1.2-5 | -9.3-6	11 | 1:11 | 48 | 2:27
sym_rd(3,30) | 46375 | 496;	15,15;77 | 2254 | 2714 | 6106	4.1-7 | 9.8-7 | 9.9-7 | 9.7-7	-3.6-6 | -4.7-6 | -2.6-5 | -1.1-5	23 | 2:45 | 3:10 | 16:48
sym_rd(3,35) | 82250 | 666;	43,46;72 | 2964 | 2812 | 11937	5.4-7 | 9.7-7 | 9.9-7 | 9.5-7	-8.0-6 | -1.3-6 | 1.8-5 | -1.9-6	1:27 | 7:54 | 7:07 | 1:09:55
sym_rd(3,40) | 135750 | 861;	37,39;82 | 3736 | 3356 | 25000	5.7-7 | 9.4-7 | 9.9-7 | **3.9-3**	-1.6-5 | -1.2-6 | -2.1-5 | **1.3-1**	2:18 | 19:34 | 16:55 | 4:37:17
sym_rd(3,45) | 211875 | 1081;	31,31;87 | 4689 | 4498 | 25000	5.5-7 | 9.3-7 | 9.9-7 | **5.5-3**	5.7-6 | -3.5-6 | -3.9-5 | **-1.5-1**	4:31 | 46:05 | 41:11 | 8:09:46
sym_rd(3,50) | 316250 | 1326;	37,37;87 | 4432 | 4161 | 25000	7.6-7 | 9.1-7 | 9.6-7 | **3.2-3**	2.4-5 | -3.7-6 | 4.2-5 | **1.1-1**	8:24 | 1:13:12 | 1:07:37 | 13:45:47
sym_rd(4,20) | 8854 | 210;	11,11;214 | 1285 | 1567 | 2587	6.6-7 | 9.8-7 | 9.7-7 | 9.9-7	1.1-5 | 4.1-6 | 2.3-5 | 9.7-6	05 | 12 | 14 | 1:03
sym_rd(4,25) | 20474 | 325;	35,36;83 | 1839 | 1965 | 14875	8.1-7 | 9.5-7 | 9.2-7 | 9.9-7	-1.5-5 | -1.2-7 | 2.8-5 | 7.6-6	16 | 49 | 49 | 15:07
sym_rd(4,30) | 40919 | 465;	29,29;74 | 2635 | 2760 | 25000	6.8-7 | 9.9-7 | 9.9-7 | **3.4-3**	-1.3-5 | 8.1-6 | -3.4-5 | **8.4-2**	44 | 3:00 | 3:01 | 56:56
sym_rd(4,35) | 73814 | 630;	46,51;77 | 969 | 3400 | 25000	2.2-7 | 9.9-7 | 9.7-7 | **5.1-4**	6.2-6 | -4.2-6 | -4.2-5 | **-1.7-2**	1:45 | 4:44 | 9:10 | 1:58:12
sym_rd(4,40) | 123409 | 820;	60,76;86 | 447 | 761 | 2396	6.6-7 | 9.9-7 | 9.9-7 | 9.9-7	-7.7-6 | -1.3-5 | -1.3-5 | -1.3-5	4:56 | 3:37 | 7:06 | 21:58
sym_rd(4,45) | 194579 | 1035;	45,62;90 | 462 | 737 | 2569	3.5-7 | 9.9-7 | 9.9-7 | 9.9-7	-4.7-6 | -1.4-5 | -1.4-5 | -1.4-5	7:44 | 6:56 | 12:42 | 43:48
sym_rd(4,50) | 292824 | 1275;	45,62;91 | 466 | 758 | 2824	7.9-7 | 9.9-7 | 9.9-7 | 9.9-7	-1.3-5 | -1.6-5 | -1.6-5 | -1.6-5	12:44 | 12:11 | 22:43 | 1:21:38
sym_rd(5,5) | 461 | 56;	8, 8;59 | 217 | 250 | 677	9.5-7 | 8.7-7 | 9.2-7 | 9.9-7	6.2-6 | 4.5-6 | 1.0-5 | 1.2-5	01 | 00 | 01 | 03
sym_rd(5,10) | 8007 | 286;	22,22;59 | 662 | 822 | 2038	7.7-7 | 9.3-7 | 9.5-7 | 9.9-7	1.6-5 | 3.3-5 | -3.4-5 | 4.9-7	07 | 13 | 14 | 1:28
sym_rd(5,15) | 54263 | 816;	41,43;111 | 1549 | 1980 | 25000	2.4-7 | 8.8-7 | 9.7-7 | **3.2-4**	8.2-6 | 7.1-5 | -3.7-5 | **1.6-2**	2:53 | 6:46 | 7:53 | 3:28:56
sym_rd(5,20) | 230229 | 1771;	29,35;139 | 2832 | 3563 | 25000	3.1-7 | 9.3-7 | 9.8-7 | **5.5-3**	-1.5-5 | 9.7-5 | **-1.0-4** | **-3.1-1**	27:28 | 1:56:14 | 2:22:52 | 27:04:51
sym_rd(6,5) | 209 | 35;	9, 9;51 | 130 | 157 | 332	3.6-7 | 9.9-7 | 8.6-7 | 9.9-7	4.9-7 | 9.4-6 | 1.1-5 | -9.4-6	01 | 00 | 00 | 01
sym_rd(6,10) | 5004 | 220;	21,21;57 | 613 | 541 | 1437	6.2-7 | 9.7-7 | 9.5-7 | 9.9-7	-1.7-5 | 2.1-5 | 3.6-5 | 1.6-5	04 | 06 | 05 | 38
sym_rd(6,15) | 38759 | 680;	32,35;137 | 1358 | 1652 | 13111	6.4-7 | 9.3-7 | 9.9-7 | 9.9-7	2.6-5 | 5.2-5 | -6.9-5 | -6.3-7	1:33 | 3:52 | 4:26 | 1:12:00
sym_rd(6,20) | 177099 | 1540;	26,37;185 | 3280 | 3576 | 25000	6.4-7 | 9.7-7 | 9.6-7 | **3.0-4**	3.0-6 | **1.5-4** | **-1.1-4** | **-2.5-2**	22:48 | 1:34:25 | 1:43:31 | 17:41:06
nsym_rd([10,10,10]) | 3024 | 100;	9, 9;250 | 2042 | 1929 | 7913	5.6-7 | 9.6-7 | 9.4-7 | 9.6-7	3.4-6 | -1.3-5 | -8.8-6 | -9.7-6	02 | 05 | 05 | 1:07
nsym_rd([15,15,15]) | 14399 | 225;	9, 9;64 | 3354 | 3263 | 25000	9.9-7 | 9.7-7 | 9.8-7 | **2.2-2**	9.4-6 | 2.0-5 | -1.6-5 | **4.1-1**	03 | 38 | 36 | 12:30
nsym_rd([20,20,20]) | 44099 | 400;	14,14;200 | 6374 | 6280 | 25000	7.3-7 | 9.9-7 | 9.9-7 | **1.1-2**	-1.0-5 | 2.6-5 | 1.3-5 | **4.3-2**	18 | 4:39 | 4:29 | 43:57
nsym_rd([20,25,25]) | 68249 | 500;	47,51;66 | 5883 | 6641 | 25000	6.0-7 | 9.8-7 | 9.7-7 | **6.1-3**	1.0-5 | -3.0-5 | 2.5-5 | **-1.2-1**	58 | 7:55 | 8:10 | 1:12:25

Table 5: Performance of SDPNAL+ (a), ADMM+ (b), SDPAD (c) and 2EBD (d) on θ and R1TA problems ($\varepsilon = 10^{-6}$)

	iteration	η	η_g	time
problem | m | $n_s; n_l$	a| b| c| d	a| b| c| d	a| b| c| d	a| b| c| d
nsym_rd([25,20,25]) | 68249 | 500;	49,50;77 | 6113 | 6912 | 25000	7.0-7 | 9.9-7 | 9.9-7 | **5.5-3**	-1.0-5 | -3.0-5 | -1.3-5 | **-8.7-2**	58 | 7:26 | 8:25 | 1:11:35
nsym_rd([25,25,20]) | 68249 | 500;	14,14;129 | 6252 | 6898 | 25000	9.0-8 | 9.9-7 | 9.9-7 | **2.8-3**	-1.6-6 | -5.9-6 | 2.7-5 | **5.2-2**	34 | 8:11 | 8:31 | 1:10:17
nsym_rd([25,25,25]) | 105624 | 625;	56,64;95 | 11250 | 3705 | 25000	9.0-7 | 9.9-7 | 9.9-7 | **6.6-4**	-1.7-5 | -4.9-6 | -1.3-5 | **1.3-2**	1:33 | 26:20 | 8:09 | 2:04:05
nsym_rd([30,30,30]) | 216224 | 900;	30,33;122 | 25000 | 4829 | 25000	6.2-7 | 2.0-5 | 9.9-7 | **4.9-3**	2.7-6 | **5.5-4** | 3.2-5 | **1.5-1**	3:52 | 2:21:43 | 26:48 | 5:07:41
nsym_rd([35,35,35]) | 396899 | 1225;	45,49;141 | 25000 | 8788 | 25000	2.0-7 | **1.4-3** | 9.9-7 | **1.0-3**	-3.5-6 | **4.1-3** | -4.2-5 | **3.6-3**	9:14 | 5:18:55 | 1:57:42 | 11:13:11
nsym_rd([40,40,40]) | 672399 | 1600;	33,35;93 | 25000 | 25000 | 25000	3.3-7 | **1.1-4** | **3.7-4** | **5.1-4**	1.0-5 | **5.0-3** | **1.3-2** | **-1.9-2**	14:23 | 12:12:03 | 13:56:21 | 22:41:13
nsym_rd([5,5,5,5]) | 3374 | 125;	10,10;128 | 2272 | 1925 | 16028	1.8-7 | 9.4-7 | 9.4-7 | 9.9-7	1.6-6 | -1.3-5 | -1.1-5 | 1.1-5	02 | 08 | 07 | 2:57
nsym_rd([6,6,6,6]) | 9260 | 216;	10,10;132 | 3194 | 5378 | 25000	5.9-7 | 9.6-7 | 9.6-7 | **2.8-2**	-6.5-6 | 4.7-6 | 1.5-5 | **-2.8-1**	04 | 32 | 51 | 10:52
nsym_rd([7,7,7,7]) | 21951 | 343;	10,10;200 | 5526 | 5861 | 25000	2.8-7 | 9.7-7 | 9.7-7 | **1.4-2**	-4.5-6 | 5.9-6 | 1.2-5 | **2.2-1**	11 | 2:36 | 2:39 | 29:16
nsym_rd([8,8,8,8]) | 46655 | 512;	11,11;200 | 5325 | 5865 | 25000	3.3-7 | 9.4-7 | 9.9-7 | **1.2-3**	-6.6-6 | 6.9-6 | -1.3-5 | **1.3-2**	28 | 7:09 | 7:13 | 1:12:01
nsym_rd([9,9,9,9]) | 91124 | 729;	14,14;200 | 21833 | 4073 | 25000	3.1-7 | 9.0-7 | 9.6-7 | **1.6-2**	6.9-6 | -7.1-6 | -3.1-5 | **-2.5-1**	1:07 | 1:12:18 | 12:47 | 2:52:40
nonsym(12,4) | 474551 | 1728;	5,17;200 | 16473 | 25000 | 25000	2.8-8 | 8.8-7 | **1.2-2** | **1.2-2**	-1.1-7 | -2.7-6 | **-7.7-2** | **5.8-1**	16:55 | 9:04:03 | 15:26:14 | 24:24:33
nonsym(13,4) | 753570 | 2197;	15,55;200 | 25000 | 25000 | 25000	5.2-7 | **5.4-4** | **9.1-3** | **1.9-2**	-1.8-7 | **3.6-2** | **-1.6-1** | **2.7-1**	1:51:34 | 29:11:11 | 32:02:36 | 54:30:04
nonsym(7,5) | 614655 | 2401;	32,43;200 | 25000 | 25000 | 25000	2.4-7 | **1.4-3** | **1.2-2** | **1.8-2**	8.7-6 | **-5.7-2** | **-1.2-1** | **-1.1-1**	53:29 | 38:36:39 | 43:46:36 | 67:40:52
nonsym(8,5) | 1679615 | 4096;	14,22;200 | 12791 | 10732 | 7851	5.2-7 | **1.2-3** | **1.3-2** | **1.2-2**	-5.5-6 | **-3.7-2** | **2.5-1** | **-4.3-1**	2:46:20 | 99:00:46 | 99:01:08 | 99:03:37
nonsym(18,4) | 5000210 | 5832;	13,55;200 | 8748 | 7962 | 7017	5.8-7 | **3.5-4** | **7.8-3** | **1.4-2**	2.6-5 | **-1.3-2** | **-3.5-1** | **3.8-1**	8:50:14 | 99:02:10 | 99:01:13 | 99:05:37
nonsym(20,4) | 9260999 | 8000;	7,17;200 | 3231 | 3031 | 2645	7.4-8 | **4.7-4** | **9.6-3** | **2.2-2**	-6.4-6 | **5.7-2** | **-4.4-1** | **-3.5-1**	8:26:40 | 99:07:11 | 99:03:17 | 99:16:28
nonsym(21,4) | 12326390 | 9261;	7,21;200 | 1918 | 1904 | 1792	5.7-8 | **2.7-4** | **9.8-3** | **5.2-3**	-1.2-6 | **2.6-3** | **5.0-1** | **9.4-1**	14:22:05 | 99:09:25 | 99:05:25 | 99:29:18