TABLE I: Subject Information in All-Alloy set.

D	SB clause Ma	IanualSB
2 alloyDistrib/adices-Book3a/show_Lenf	N/A	N/A
3 alioyDistrib/hosic-auth/rumS Lenf 485 2725 5153 4090 7472 3977 8933 4 alioyDistrib/hord/FineScessor/Works 7cm 173 2449 4213 22449 4213 2246 5107 5 alioyDistrib/chord/FineScessor/Works 7cm 173 5069 8970 5069 8970 5069 6 alioyDistrib/chord/ShowMet_ 14cm 192 2841 5458 2841 5458 3782 8267 8 alioyDistrib/chord/ShowMet_ 215cm 192 2841 5458 2841 5458 3782 8267 9 alioyDistrib/chord/ShowMet_ 215cm 192 3723 6919 3723 6919 4565 9430 10 alioyDistrib/chord/ShowMet_ 215cm 496 13586 25243 13883 26098 11 alioyDistrib/chord/ShowMet_ 34cm 496 13586 25243 13883 2597 4973 12 alioyDistrib/chord/ShowMet_ 215cm 149 3214 5584 3214 5584 3511 6469 13 alioyDistrib/chord/ShowMet_ 215cm 149 3214 5584 3214 5584 3511 6469 13 alioyDistrib/distrib/distrib-distrib/distrib-distrib/distrib-distr	N/A	N/A
4 alloyDistrib/chord/FindSuccessorWorks 7.cm	N/A	N/A
Social Control Soci	N/A	N/A
6 alloyDistrib/chord/ShowMeL 4-cnf 167 3910 8570 3910 8570 4108 9159 2814 5458 2841 5458 3782 8267 8 alloyDistrib/chord/ShowMeL 4-cnf 192 3723 6919 4565 9430 3109 3125 3109 3125 3109 3125	N/A	N/A
Tolerang	N/A	N/A
8	N/A	N/A
9 alloyDistrib/chord/ShowMeEC_4.cnf 61 744 1153 744 1153 1023 1993 alloyDistrib/chord/ShowMeGod_ShowMeC_5 496 13586 25243 13886 25243 13888 26908 11 alloyDistrib/chord/bugmodel/ShowMeCod_2.cnf 149 3214 5584 3214 5584 3511 6469 12 alloyDistrib/chord/bugmodel/ShowMeCod_2.cnf 149 3214 5584 3214 5584 3511 6469 13 alloyDistrib/chord/bugmodel/ShowMeCod_2.cnf 149 3214 5584 3214 5584 3511 6469 14 alloyDistrib/distria-K-state/TwoPrivileged_2.cnf 143 2654 5300 2654 5300 2753 5581 15 alloyDistrib/fileyswine/beckS1_Lcnf 127 1532 3106 1532 3106 1730 3702 16 alloyDistrib/firewire/ChectionHappens_2.cnf 456 12600 23968 12600 23968 12897 24862 18 alloyDistrib/firewire/ChectionHappens_2.cnf 531 16725 31694 16725 31694 17022 332588 18 alloyDistrib/firewire/ChectionHappens_2.cnf 288 6410 15593 6410 15593 6685 15285 18 alloyDistrib/firewire/ChectionHappens_2.cnf 288 6410 15593 6410 15593 6685 15285 18 alloyDistrib/firewire/ChectionHappens_2.cnf 288 6410 15593 6410 15593 6685 15285 18 alloyDistrib/firewire/Shade/Pt 4_3.cnf 392 9548 23300 9548 23300 9938 22910 22 alloyDistrib/firewire/Shade/Pt 4_3.cnf 392 9548 23300 9548 23300 9938 22910 23 alloyDistrib/firewire/Shade/Pt 4_3.cnf 392 3654 33107 14059 33627 24 alloyDistrib/firewire/Shade/Pt 4_3.cnf 391 7886 20992 8885 21591 8183 21286 24 alloyDistrib/firewire/Shade/Pt 4_3.cnf 391 7886 20992 8885 21591 8183 21286 24 alloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/firewire/Shade/AlloyDistrib/fi	N/A	N/A
10	N/A	N/A
11 alloyDistrib/chordbugmodel/ShowMcCorrectSuccessorEg_3.cnf 130 2399 4381 2399 4381 2391 2391 2391 2391 2391 2391 2391 2391 2391 2391	N/A	N/A
12 alloy Distrib/chordbugmodel/StrongerFindSuccessorWorks_6.cnf 149 3214 5584 3214 5584 3511 6469 3 alloy Distrib/chordbugmodel/StrongerFindSuccessorWorks_6.cnf 282 4561 8787 4561 8787 4858 9673 4 alloy Distrib/dijkstra-K-state/TwoPrivileged_2.cnf 143 2654 5300 2654 5300 2753 5581 5 alloy Distrib/file_systen/check\$1_Lcnf 127 1532 3106 1532 3106 1730 3702 6 alloy Distrib/fire_systen/check\$1_Lcnf 127 1532 3106 1532 3106 1730 3702 16 alloy Distrib/firewire/Execution_1.cnf 290 6823 12552 6823 12552 7120 13446 8 alloy Distrib/firewire/Execution_1.cnf 290 6823 12552 6823 12552 7120 13446 8 alloy Distrib/firewire/CheceventuallyElected_7.cnf 531 16725 31694 16725 31694 17022 32588 19 alloy Distrib/finadshake/P10_1.cnf 200 3988 9584 4168 9386 9 alloy Distrib/finadshake/P12_2.cnf 288 6410 15593 6410 15593 6685 15285 21 alloy Distrib/finadshake/P14_3.cnf 392 9548 23300 9948 23300 9938 22910 22 alloy Distrib/finadshake/P14_3.cnf 391 7886 20992 8585 21591 8183 21286 23 alloy Distrib/finadshake/P14_cnf 391 7886 20992 8585 21591 8183 21286 24 alloy Distrib/finedis/savtypes/Show_1.cnf 46 334 620 334 620 522 1037 25 alloy Distrib/fire/Show_2.cnf 324 27394 92875 27394 92875 27394 90783 28 alloy Distrib/fire/Show_2.cnf 324 27394 92875 27394 92875 27394 90783 28 alloy Distrib/fire/Show_2.cnf 120 1640 3662 2266 4730 2135 5152 30 alloy Distrib/fire/Show_2.cnf 496 4513 7007 4513 7007 6145 11905 31 alloy Distrib/fire/Show_2.cnf 496 4513 7007 4513 7007 6145 11905 32 alloy Distrib/fire/Show_2.cnf 496 4513 7007 4513 7007 6145 11905 33 alloy Distrib/fire/Show_2.cnf 496 4513 7007 4513 7007 6145 11905 34 alloy Distrib/fire/Show_	N/A	N/A
13	N/A	N/A
14 alloy Distrib/filikstra-K-state/TwoPrivileged_2.cnf	N/A	N/A
15 alloy Distrib/file_system/check\$1_Lenf	N/A	N/A
16 alloy Distrib/firewire/ElectionHappens_2.cnf 456 12600 23968 12600 23968 12897 24862 18 alloy Distrib/firewire/DeceventuallyElected_7.cnf 290 6823 12552 6823 12552 7120 13446 18 alloy Distrib/firewire/OneEventuallyElected_7.cnf 531 16725 31694 16725 31694 17022 32588 19 alloy Distrib/firewire/OneEventuallyElected_7.cnf 200 3988 9584 3988 9584 4168 9386 200	N/A	N/A
17	N/A	N/A
18	N/A	N/A
19 alloyDistrib/handshake/P10_1.cnf 200 3988 9584 3988 9584 4168 9386 201	N/A	N/A
20 alloyDistrib/handshake/P12_2.cnf 288 6410 15593 6410 15593 6685 15285 21 alloyDistrib/handshake/P14_3.cnf 392 9548 23300 9938 22910 22 alloyDistrib/handshake/P14_3.cnf 512 13534 33107 13534 33107 14059 32627 23 alloyDistrib/handshake/P16_4.cnf 512 13534 33107 13534 33107 14059 32627 24 alloyDistrib/hotel3/NoBadEntry_1.cnf 391 7886 20392 8885 21591 8183 21286 24 alloyDistrib/hotel3/NoBadEntry_1.cnf 46 384 620 384 620 522 1037 25 alloyDistrib/life/show_2.cnf 90 3654 11352 3654 11352 3654 10956 26 alloyDistrib/life/show_2.cnf 324 27394 92875 27394 92875 27394 90783 27 alloyDistrib/mediaAssets/Quare_1.cnf 95 4654 13779 4654 13779 4654 13345 28 alloyDistrib/mediaAssets/CutPaste_2.cnf 120 1640 3662 2266 4730 2135 5153 28 alloyDistrib/mediaAssets/PasteCut_3.cnf 120 1640 3662 2266 4730 2135 5152 30 alloyDistrib/messaging/OutOfOrder_2.cnf 496 4513 7007 4513 7007 6145 11905 31 alloyDistrib/messaging/SomeState_1.cnf 76 609 731 916 1656 32 alloyDistrib/messaging/SomeState_1.cnf 76 609 731 609 731 916 1656 33 alloyDistrib/origin-tracking/check\$2_2.cnf 190 3247 6294 4037 7664 3445 6865 34 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 197 5235 11247 5942 12460 5532 12141 36 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 400 5233 11773 5530 12667 37 3109Distrib/paragraph-numbering/AddNeverReduces_2.cnf 400 5235 11247 5942 12460 5532 12141 36 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 400 5235 11247 5942 12460 5532 12141 37 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 400 5235 11247 5942 12460 5530 12667 37 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 400 5235 11247 5942 12460 553	N/A	N/A
21	N/A	N/A
22 alloyDistrib/handshake/PI 6_4.cnf 512 13534 33107 13534 33107 14059 32627 23 alloyDistrib/hote/3/NOBadEntry_L.cnf 391 7886 20392 8585 21591 8183 21286 24 alloyDistrib/javtypes/Show_L.cnf 46 384 620 384 620 384 620 522 1037 25 alloyDistrib/life/finteresting_3.cnf 90 3654 11352 3654 11352 3654 10956 26 alloyDistrib/life/Show_2.cnf 324 27394 92875 27394 92875 27394 90783 27 alloyDistrib/life/Square_L.cnf 95 4654 13779 4654 13779 4654 13374 28 alloyDistrib/mediaAssets/CutPaste_2.cnf 120 1640 3662 2266 4730 2135 5153 28 alloyDistrib/mediaAssets/CutPaste_2.cnf 120 1640 3662 2266 4730 2135 5153 30 alloyDistrib/messaging/SomeState_L.cnf 76 609 731 916 1656 31 alloyDistrib/messaging/SomeState_L.cnf 76 609 731 916 1656 32 alloyDistrib/prigin-tracking/checkS2_2.cnf 190 3247 6294 4037 7664 3445 6865 33 alloyDistrib/p303-hotel/NoIntruder_1.cnf 137 3138 6436 3595 7218 3435 7330 34 alloyDistrib/p303-hotel/NoIntruder_2.cnf 420 5233 11773 5530 12667 38 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5530 12667 39 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5530 12667 30 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5530 12667 30 alloyDistrib/pionesener/mS1_L.cnf 698 8079 17853 8079 17853 8178 18151 30 alloyDistrib/pionesener/mS1_L.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/mS5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/prisoner/mS5_5.cnf 506 596 1566 595 1566 50	N/A	N/A
23 alloyDistrib/notel2/NoBadEntry_Lenf 391 7886 20392 8885 21591 8183 21286 24 alloyDistrib/javatypes/Show_Lenf 46 384 620 384 620 522 1037 25 alloyDistrib/life/Interesting_3.cnf 90 3654 11352 3654 11352 3654 10956 26 alloyDistrib/life/Show_2.enf 324 27394 92875 27394 92875 27394 90783 27 alloyDistrib/life/Show_2.enf 95 4654 13779 44654 13379 4654 13345 28 alloyDistrib/mediaAssets/CutPaste_2.enf 120 1640 3662 2266 4730 2135 5153 29 alloyDistrib/mediaAssets/PasteCut_3.enf 120 1640 3662 2266 4730 2135 5153 30 alloyDistrib/mediaAssets/PasteCut_3.enf 120 1640 3662 2266 4730 2135 5152 31 alloyDistrib/messaging/GutOffOrder_2.enf 496 4513 7007 4513 7007 4513 7007 6145 11905 31 alloyDistrib/messaging/GutOffOrder_2.enf 76 609 731 916 1656 32 alloyDistrib/opt_spantree/SuccessfulRun_1.enf 205 4568 8718 4568 8718 4568 8718 33 alloyDistrib/opt_in-tracking/checkS2_2.enf 190 3247 6294 4037 7664 3445 6865 34 alloyDistrib/p300-hotel/NoIntruder_1.enf 137 3138 6436 3395 7218 3435 7330 35 alloyDistrib/pargraph-numbering/AddNeverReduces_2.enf 420 5233 11773 5233 11773 5350 12667 37 alloyDistrib/pargraph-numbering/AddNeverReduces_2.enf 698 8079 17853 8079 17853 8178 81151 39 alloyDistrib/philosophers/furS1_l.enf 698 8079 17853 8079 17853 8178 81151 39 alloyDistrib/peterson/ThreeRun_2.enf 1020 2242 5543 2910 6691 2440 6003 40 alloyDistrib/quens/furS1_l.enf 2048 22807 70414 29970 82925 22906 66840 41 alloyDistrib/quens/furS1_l.enf 2048 22807 70414 29970 82925 22906 66840 42 alloyDistrib/quens/furS1_l.enf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/quens/furS1_l.enf 2048 22807 70414 29970 82925 22906 66840 44 alloyDistrib/quens/furS1_l.enf 2048	N/A	N/A
24 alloyDistrib/javatypes/Show_Lonf 46 384 620 322 1037 25 alloyDistrib/life/Interesting_3.cnf 90 3654 11352 3654 11352 3654 10956 26 alloyDistrib/life/Show_2.cnf 324 27394 92875 27394 92875 27394 90783 27 alloyDistrib/life/Square_Lonf 95 4654 13779 4654 13779 4654 13739 4654 13749 4654 13345 5152 30 2105 5664 4730 2135 5153 5153 <	N/A	N/A
25 alloyDistrib/life/nureresting_3.cnf 90 3654 11352 3654 11352 3654 10956 26 alloyDistrib/life/Square_1.cnf 95 3654 13779 4654 13779 1	N/A	N/A
26 alloyDistrib/life/Show_2.enf 324 27394 99875 27394 92875 27394 90783 27 alloyDistrib/life/Square_1.cnf 95 4654 13779 4654 13759 4654 13779 4654 13779 4654 13759 4654 13779 4654 13779 4654 13759 4654 13779 4654 13759 1456 4730 2135 5152 1009 131 916 6665 4668 4730 2135 5152 466 469	N/A	N/A
27	N/A	N/A
28 alloyDistrib/mediaAssets/CutPaste_2.cnf 120 1640 3662 2266 4730 2135 5153 30 alloyDistrib/mediaAssets/PasteCut_3.cnf 120 1640 3662 2266 4730 2135 5152 30 alloyDistrib/mesaging/GutofOrder_2.cnf 496 4513 7007 4513 7007 6145 111905 31 alloyDistrib/mesaging/SomeState_1.cnf 76 609 731 916 1656 32 alloyDistrib/passesing/SomeState_1.cnf 205 4568 8718 4568 8718 33 alloyDistrib/porigin-tracking/check\$2_2.cnf 190 3247 6294 4037 7664 3445 6865 34 alloyDistrib/p300-hotel/Noltruder_2.cnf 137 3138 6436 3595 7218 3435 7330 35 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5235 11247 5942 12460 5532 12141 36 alloyDistrib/peterson/ThrecRun_2.cnf 1038 12338 </td <td>N/A</td> <td>N/A</td>	N/A	N/A
29 alloyDistrib/mediaAssets/PasteCut_3.cnf 120 1640 3662 2266 4730 2135 5152 30 alloyDistrib/messaging/OutOffOrder_2.cnf 496 4513 7007 4513 7007 6145 11905 31 alloyDistrib/messaging/SomeState_1.cnf 76 609 731 609 731 916 1656 32 alloyDistrib/opt_spantree/SuccessfulRun_1.cnf 205 4568 8718 4568 8718 4568 8718 33 alloyDistrib/opt_in-tracking/check\$2_2.cnf 190 3247 6294 4037 7664 3445 6865 34 alloyDistrib/p301-hotel/NoIntruder_1.cnf 137 3138 6436 3595 7218 3435 7330 35 alloyDistrib/p303-hotel/NoIntruder_2.cnf 207 5235 11247 5942 12460 5532 12141 36 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5233 11773 5530 12667 37 alloyDistrib/peterson/ThreeRun_2.cnf 1038 12338 27266 12338 27266 12437 27564 38 alloyDistrib/peterson/TwoRun_1.cnf 698 8079 17853 8178 18151 39 alloyDistrib/philosophers/Luveliness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/philosophers/run\$1_1.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/run\$5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/prisoper/run\$1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/palicyphicosphers/Lun\$1_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
30	N/A	N/A
31	N/A	N/A
32 alloyDistrib/orgi_spantree/SuccessfulRun_1.cnf 205 4568 8718 4568 8718 4568 8718 33 alloyDistrib/origin-tracking/check\$2_2.cnf 190 3247 6294 4037 7664 3445 6865 34 3490 3491	N/A	N/A
33 alloyDistrib/origin-tracking/check\$2_2.cnf 190 3247 6294 4037 7664 3445 6865 34 alloyDistrib/p300-hotel/Noltruder_1.cnf 137 3138 6436 3595 7218 3435 7330 35 alloyDistrib/p303-hotel/Noltruder_2.cnf 207 5235 11247 5942 12460 5532 12141 36 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5530 12667 37 alloyDistrib/peterson/ThreeRun_2.cnf 1038 12338 27266 12338 27266 12437 27564 38 alloyDistrib/philosophers/Liveliness_2.cnf 698 8079 17853 8079 17853 8178 18151 39 alloyDistrib/philosophers/Liveliness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/pilosophers/runS1_l.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/piloso	N/A	N/A
34 alloyDistrib/p300-hotel/NoIntruder_1.cnf 137 3138 6436 3595 7218 3435 7330 35 alloyDistrib/p303-hotel/NoIntruder_2.cnf 207 5235 11247 5942 12460 5532 12141 36 alloyDistrib/pargraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5233 11773 5530 12667 37 alloyDistrib/peterson/ThreeRun_2.cnf 1038 12338 27266 12338 27266 12437 27564 38 alloyDistrib/peterson/TwoRun_1.cnf 698 8079 17853 8079 17853 8178 18151 39 alloyDistrib/philosophers/LrunS1_1.cnf 120 2242 5543 1900 9266 21980 7752 19089 40 alloyDistrib/prisoner/runS1_1.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/runS2_5.cnf 707 8010 24515 8842 25967 8076 22465	N/A	N/A
35 alloyDistrib/pa303-hotel/NoIntruder_2.cnf 207 5235 11247 5942 12460 5532 12141 36 alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 420 5233 11773 5233 11773 5530 12667 37 alloyDistrib/peterson/ThreeRun_2.cnf 1038 12338 27266 12338 27266 12437 27564 38 alloyDistrib/peterson/TwoRun_1.cnf 698 8079 17853 8079 17853 8178 18151 39 alloyDistrib/philosophers/Liveliness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/philosophers/Liveliness_2.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/runS1_1.cnf 120 2242 5543 2910 6691 2440 6003 42 alloyDistrib/prisoner/runS1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/pailway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
36 alloyDistrib/pargraph-numbering/AddNeverReduces_2.cnf	N/A	N/A
37 alloyDistrib/peterson/ThreeRun_2.cnf 1038 12338 27266 12338 27266 12437 27564 38 alloyDistrib/pitopeterson/ThreeRun_2.cnf 698 8079 17853 8179 17853 8178 18151 39 alloyDistrib/philosophers/Lueiness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/philosophers/run\$1_1.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/run\$5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/queens/run\$1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
38 alloyDistrib/peterson/TwoRun_L.cnf 698 8079 17853 8079 17853 8178 18151 39 alloyDistrib/philosophers/Liveliness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/philosophers/runS1_L.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/runS5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/queens/runS1_L.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railway/PolicyWorks_L.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
39 alloyDistrib/philosophers/Liveliness_2.cnf 307 7554 19005 9266 21980 7752 19089 40 alloyDistrib/philosophers/rum\$1_1.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/rum\$5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/quens/rum\$1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
40 alloyDistrib/philosophers/run\$1_1.cnf 120 2242 5543 2910 6691 2440 6003 41 alloyDistrib/prisoner/run\$5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/queens/run\$1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
41 alloyDistrib/prisoner/run\$5_5.cnf 707 8010 24515 8842 25967 8076 22465 42 alloyDistrib/queen/run\$1_1_l.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railwayPolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
42 alloyDistrib/queens/run\$1_1.cnf 2048 22807 70414 29970 82925 22906 66840 43 alloyDistrib/railway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
43 alloyDistrib/railway/PolicyWorks_1.cnf 80 956 1566 956 1566 1253 2460	N/A	N/A
	N/A	N/A
	N/A	N/A
45 alloyDistrib/ringlead/SomeLeader 4.cnf 627 9333 16876 9333 16876 9724 17573	N/A	N/A
46 alloyDistrib/stable ringlead/CBadLivenessTrace 5.cnf 137 4746 8476 4905 8804	N/A	N/A
47 alloyDistrib/view-backing/zippishOK 1.cnf 1734 93764 291349 93764 291349 93764 289725	N/A	N/A
47 andy District view-backing Jappinson Ltm 1734 3704 27139 371000000000000000000000000000000000000	N/A	N/A
49 kodkod 15/alloy/GroupScheduling/1.cnf 285 4158 10669 5508 12991 4158 9397	N/A	N/A
50 kodkod 15/alloy/Handshake/1.cnf 200 3901 9292 4841 11016 4045 9058	N/A	N/A
51 kodkod 15/alloy/Lists/Lenf 180 3122 7626 3644 8528 3277 8021	N/A	N/A
S2 kodkod 15/alloy/Pigeonhole/Lorf 8188 388755 764957 453358 877429 397566 834629	N/A	N/A
22 Kolkod 15/alloy/ToyLists/1.cnf 138 2004 4760 2562 5724 2202 5311	N/A	N/A

TABLE II: Subject Information in All-Alloy set.

ID	subjects	primary	var ^{NoSB}	clause ^{NoSB}	var ^{AlloySB}	clause ^{AlloySB}	var ^{CNFSB}	clause ^{CNFSB}	var ^{ManualSB}	clause $ManualSB$
54	kodkod_15/csp/BlockedNQueens/1.cnf	200	8615	27337	9328	28554	8714	23990	N/A	N/A
55	kodkod_15/csp/GraphColoring/1.cnf	120	631	1550	990	2167	932	2457	N/A	N/A
56	kodkod 15/csp/GraphColoring2/1.cnf	150	1021	1700	1339	2242	1417	2892	N/A	N/A
57	kodkod_15/csp/LatinSquare/1.cnf	512	73271	12182	77410	19401	73370	12480	N/A	N/A
58	kodkod 15/csp/NQueens/1.cnf	48	3332	12099	3411	12255	4026	12242	N/A	N/A
59	kodkod_15/tptp/GEO115/1.cnf	280	2747	3042	4975	6920	5928	12605	N/A	N/A
60	kodkod 15/tptp/MGT066/1.cnf	1024	7105	11936	8892	15013	7897	14463	N/A	N/A
61	queenGeneralCnfs/3queen 1/NQueensProblem 1.cnf	3072	20969	56705	27113	71033	21167	55370	N/A	N/A
62	queenGeneralCnfs/3queen_2/NQueensProblem_1.cnf	3072	20969	56630	27113	70958	21167	55295	N/A	N/A
63	queenGeneralCnfs/3queen_3/NQueensProblem_1.cnf	3072	20969	56549	27113	70877	21167	55214	N/A	N/A
64	queenGeneralCnfs/3queen 4/NQueensProblem 1.cnf	3072	20969	56462	27113	70790	21167	55127	N/A	N/A
65	queenGeneralCnfs/3queen 5/NQueensProblem 1.cnf	3072	20969	56369	27113	70697	21167	55034	N/A	N/A
66	queenGeneralCnfs/3queen_6/NQueensProblem_1.cnf	3072	20969	56270	27113	70598	21167	54935	N/A	N/A
67	queenGeneralCnfs/3queen 7/NQueensProblem 1.cnf	3072	20969	56165	27113	70493	21167	54830	N/A	N/A
68	queenGeneralCnfs/3queen_8/NQueensProblem_1.cnf	3072	20969	56054	27113	70382	21167	54719	N/A	N/A
69	queenGeneralCnfs/3queen_9/NQueensProblem_1.cnf	3072	20969	55937	27113	70265	21167	54602	N/A	N/A
70	queenGeneralCnfs/3queen_10/NQueensProblem_1.cnf	3072	20969	55814	27113	70142	21167	54479	N/A	N/A
71	queenGeneralCnfs/3queen 11/NQueensProblem 1.cnf	3072	20969	55685	27113	70013	21167	54350	N/A	N/A
72	queenGeneralCnfs/nqueen_1/NQueensProblem_1.cnf	1024	3762	7163	3762	7163	3762	7163	N/A	N/A
73	queenGeneralCnfs/nqueen 2/NQueensProblem 1.cnf	2048	11477	30870	14549	38034	11576	29984	N/A	N/A
74	queenGeneralCnfs/nqueen_3/NQueensProblem_1.cnf	3072	20969	56549	27113	70877	21167	55214	N/A	N/A
75	queenGeneralCnfs/nqueen 4/NQueensProblem 1.cnf	4096	33326	89753	42541	111244	33623	87866	N/A	N/A
76	queenGeneralCnfs/nqueen_4/NQueensProblem_1.cnf	5120	48549	130477	60835	159131	48945	127937	N/A	N/A N/A
77	queenGeneralCnfs/nqueen_5/NQueensProblem_1.cnf queenGeneralCnfs/nqueen_6/NQueensProblem_1.cnf	6144	66638	178715	81995	214532	67133	175420	N/A N/A	N/A N/A
78		7168	87593	234461	106021	277441	88187	230309	N/A	N/A N/A
79	queenGeneralCnfs/nqueen_7/NQueensProblem_1.cnf	8192	111414	297709	132913	347852	112107	292601	N/A N/A	N/A N/A
80	queenGeneralCnfs/nqueen_8/NQueensProblem_1.cnf	9216	138101			425759	138893	362273		
	queenGeneralCnfs/nqueen_9/NQueensProblem_1.cnf			368453	162671				N/A	N/A
81	queenGeneralCnfs/nqueen_10/NQueensProblem_1.cnf	10240	167654	446687	195295	511156	168545	439331	N/A	N/A
82	queenGeneralCnfs/nqueen_11_blocked/NQueensProblem_1.cnf	11264	200074	532527	230786	604159	201064	523947	N/A	N/A
83	queenGeneralCnfs/nqueen_11/NQueensProblem_1.cnf	11264	200073	532405	230785	604037	201063	523828	N/A	N/A
84	AlyDataCnfs/bst-exactly-6-Node/RepOk_1.cnf	191	3632	9140	4169	10062	3731	8594	3778	9863
85	AlyDataCnfs/bst-exactly-7-Node/RepOk_1.cnf	234	4935	12538	5627	13728	5034	11802	5126	13633
86	AlyDataCnfs/bst-exactly-8-Node/RepOk_1.cnf	425	8899	24275	9818	25859	8999	21883	9141	25854
87	AlyDataCnfs/bst-exactly-9-Node/RepOk_1.cnf	492	12051	33698	13101	35508	12150	30880	12350	35951
88	AlyDataCnfs/bt-exactly-6-Node/RepOk_1.cnf	79	1251	3466	1668	4178	1446	4053	1613	4585
89	AlyDataCnfs/bt-exactly-7-Node/RepOk_1.cnf	106	1847	5328	2443	6350	2045	5924	2381	7060
90	AlyDataCnfs/bt-exactly-8-Node/RepOk_1.cnf	137	2602	7749	3409	9137	2800	8345	3356	10288
91	AlyDataCnfs/bt-exactly-9-Node/RepOk_1.cnf	172	4389	13879	5439	15689	4587	14475	5417	17509
92	AlyDataCnfs/dllist-exactly-6-Node/RepOk_1.cnf	109	2438	7004	2955	7891	2549	7339	2452	7120
93	AlyDataCnfs/dllist-exactly-7-Node/RepOk_1.cnf	141	3625	10784	4341	12016	3738	11125	3641	10940
94	AlyDataCnfs/dllist-exactly-8-Node/RepOk_1.cnf	177	5148	15727	5703	16674	5263	16074	5166	15929
95	AlyDataCnfs/dllist-exactly-9-Node/RepOk_1.cnf	217	8741	28208	9439	29402	8858	28561	8761	28462
96	AlyDataCnfs/rbt-exactly-6-Node/RepOk_1.cnf	203	5375	12991	5952	13983	5564	12478	5521	13780
97	AlyDataCnfs/rbt-exactly-7-Node/RepOk_1.cnf	248	7336	17832	8076	19106	7561	17145	7527	19018
98	AlyDataCnfs/rbt-exactly-8-Node/RepOk_1.cnf	297	9688	23706	10607	25290	9955	22834	9930	25405
99	AlyDataCnfs/rbt-exactly-9-Node/RepOk_1.cnf	510	18694	48290	19808	50212	19045	45562	18993	50696
100	AlyDataCnfs/sllist-exactly-6-Node/RepOk_1.cnf	43	992	3039	1209	3401	1091	3337	1006	3155
101	AlyDataCnfs/sllist-exactly-7-Node/RepOk_1.cnf	57	1496	4739	1804	5257	1595	5037	1512	4895
102	AlyDataCnfs/sllist-exactly-8-Node/RepOk_1.cnf	73	2145	6972	2560	7674	2244	7270	2163	7174
103	AlyDataCnfs/sllist-exactly-9-Node/RepOk_1.cnf	91	3803	12888	4341	13802	3902	13186	3823	13142
104	AlyDataCnfs/sortedlist-exactly-6-Node/RepOk_1.cnf	139	4930	14157	5467	15079	5029	13189	4944	14273
105	AlyDataCnfs/sortedlist-exactly-7-Node/RepOk_1.cnf	169	6430	18598	7122	19788	6529	17419	6446	18754
106	AlyDataCnfs/sortedlist-exactly-8-Node/RepOk_1.cnf	201	8173	23826	9036	25312	8272	22436	8191	24028
107	AlyDataCnfs/sortedlist-exactly-9-Node/RepOk 1.cnf	235	11023	33054	12073	34864	11122	31453	11043	33308

TABLE III: Alloy with ApproxMC

subjects	No SB Time	No SB Solution	No SB Error	Alloy SB Time	Alloy SB Solution	Alloy SB Error	CNF SB Time	CNF SB Solution	CNF SB Error
alloyDistrib/addressBook1g/delUndoesAdd_1.cnf	1.72	106496	0.017620303	0.13	640	0.059602649	1.01	30720	0.049789837
alloyDistrib/addressBook3a/show_1.cnf	1.74	62464	0.026692965	1.1	2752	0.039667548	1.57	58368	0.034196818
alloyDistrib/basic-auth/run\$1_1.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	
alloyDistrib/chord/FindSuccessorWorks_17.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/chord/FPisActive_9.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	
alloyDistrib/chord/SameFP_10.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/chord/ShowMe1_14.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	
alloyDistrib/chord/ShowMe2_15.cnf	676.46	2.88E+18	0.010526316	681.55	2.88E+18	0.010526316	74.75	1.76E+17	-
alloyDistrib/chord/ShowMeFC_4.cnf	1.43	11534336	0.05931923	1.41	11534336	0.05931923	0.85	6160384	0.070823241
alloyDistrib/chordbugmodel/ShowMe3_4.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/chordbugmodel/ShowMeCorrectSuccessorEg_3.cnf	2.01	83886080	0.081219482	2	83886080	0.081219482	1.97	49283072	0.01616861
alloyDistrib/chordbugmodel/ShowMeGood_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/chordbugmodel/StrongerFindSuccessorWorks_6.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	
alloyDistrib/dijkstra-K-state/TwoPrivileged_2.cnf	63.79	528482304	0.019059382	63.65	528482304	0.019059382	58.36	276824064	0.011495672
alloyDistrib/file_system/check\$1_1.cnf	5000	unknown	-	5000	unknown	-	3366.47	2080374784	
alloyDistrib/firewire/ElectionHappens_2.cnf	285.69	966656	-	285.97	966656	-	248	704512	-
alloyDistrib/firewire/Execution_1.cnf	861.32	1023410176	-	863.27	1023410176	-	895.4	1023410176	
alloyDistrib/firewire/OneEventuallyElected_7.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/handshake/P10_1.cnf	445.14	47104	0.168253968	443.23	47104	0.168253968	440.14	47104	0.168253968
alloyDistrib/handshake/P12_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/handshake/P14_3.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/handshake/P16_4.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/hotel3/NoBadEntry_1.cnf	148.04	129024	0.044289044	1.09	168	0.012048193	43.91	50176	0.096503497
alloyDistrib/javatypes/Show_1.cnf	0.57	52224	0.048943015	0.57	52224	0.048943015	0.49	40960	0.102290159
alloyDistrib/life/interesting_3.cnf	14.97	12544	0.033163265	14.93	12544	0.033163265	16.71	12544	0.033163265
alloyDistrib/life/Show_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/life/Square_1.cnf	3.91	976	0.014553015	3.91	976	0.014553015	4.17	976	0.014553015
alloyDistrib/mediaAssets/CutPaste_2.cnf	160	144703488	0.064579782	0.74	137216	0.010575932	29.21	13631488	0.110809079
alloyDistrib/mediaAssets/PasteCut_3.cnf	217.9	63963136	0.050068543	0.62	62464	0.029072746	19.72	5767168	0.058489427
alloyDistrib/messaging/OutOfOrder_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/messaging/SomeState_1.cnf	0.79	88080384	0.004820892	0.8	88080384	0.004820892	0.78	6684672	0.007849551
alloyDistrib/opt_spantree/SuccessfulRun_1.cnf	1.09	213909504	0	1.1	213909504	0	1.08	213909504	0
alloyDistrib/origin-tracking/check\$2_2.cnf	158.31	2621440	0.046232439	0.38	280	0.014492754	87.31	1310720	0.027496338
alloyDistrib/p300-hotel/NoIntruder_1.cnf	1.06	2272	0.051851852	0.02	30	0	0.69	552	0.022222222
alloyDistrib/p303-hotel/NoIntruder_2.cnf	6.91	17664	0.108695652	0.04	17	0	2.78	4608	0.019018134
alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/peterson/ThreeRun_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/peterson/TwoRun_1.cnf	6.67	4288	0.102880658	6.67	4288	0.102880658	5.96	2944	0.135802469
alloyDistrib/philosophers/Liveliness_2.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
alloyDistrib/philosophers/run\$1_1.cnf	5.57	51200	0.0378125	0.95	2432	0.098464318	5.55	50176	0.030054209
alloyDistrib/prisoner/run\$5_5.cnf	0.77	24576	0.000488281	2.23	12288	0.000488281	1.93	12288	0.000488281
alloyDistrib/queens/run\$1_1.cnf	5000	unknown	-	2.96	92	0	5000	unknown	-
alloyDistrib/railway/PolicyWorks_1.cnf	1.1	499712	0.059502001	1.11	499712	0.059502001	0.91	126976	0.006001134
alloyDistrib/railway/TrainsMoveLegal_2.cnf	38.14	3.71E+12	0.072254335	38.15	3.71E+12	0.072254335	49.97	1.34E+12	-
alloyDistrib/ringlead/SomeLeader_4.cnf	5000	unknown	-	5000	unknown	-	3948.32	3.12E+14	-
alloyDistrib/stable_ringlead/CBadLivenessTrace_5.cnf	2.24	5120	0.0125	2.21	5120	0.0125	1.73	2432	0.065789474
alloyDistrib/view-backing/zippishOK_1.cnf	5000	unknown	-	5000	unknown	-	5000	unknown	-
kodkod_15/alloy/FileSystem/1.cnf	1305.39	5637144576	-	1.65	92160	0.055208333	815.24	3825205248	-
kodkod_15/alloy/GroupScheduling/1.cnf	5000	unknown	-	218.16	1344	0	5000	unknown	-
kodkod_15/alloy/Handshake/1.cnf	421.08	47104	0.168253968	1	1	0	463.98	47104	0.168253968
kodkod_15/alloy/Lists/1.cnf	5000	unknown	-	5.92	434176	0.110702938	5000	unknown	-
kodkod_15/alloy/Pigeonhole/1.cnf	5000	unknown	-	0.91	1	0	5000	unknown	-
kodkod_15/alloy/ToyLists/1.cnf	286.22	96468992	0.023035344	1.06	3968	0.092511013	218.35	35651584	0.031141393
kodkod_15/csp/BlockedNQueens/1.cnf	5000	unknown	-	9.17	352	0.083076923	5000	unknown	-
kodkod_15/csp/GraphColoring/1.cnf	324.47	54525952	0.07560513	14.59	2228224	0.054920415	17.5	8650752	0.119252813
kodkod 15/csp/GraphColoring2/1.cnf	5000	unknown	-	5000	unknown	-	3511.95	1.72E+11	-
	5000								l .
kodkod 15/csp/LatinSquare/1.cnf	5000		0.066666667	0.26	6	0	44.79	368	0.02222222
kodkod_15/csp/LatinSquare/1.cnf kodkod_15/csp/NQueens/1.cnf		768 3670016	0.066666667	0.26 1.05	6 92	0	44.79 3889.46	368 425984	0.022222222
	52	768	0.066666667		6 92 1.96E+81				0.022222222

TABLE IV: Data Structures with ApproxMC

subjects	No SB Time	No SB Solution	No SB Error	Alloy SB Time	Alloy SB Solution	Alloy SB Error	CNF SB Time	CNF SB Solution	CNF SB Error	Manual SB Time	Manual SB Solution	Manual SB Error
bst-exactly-6-Node/RepOk_1.cnf	1079.16	96256	0.012794613	1.35	128	0.03125	867.87	92160	0.027562216	1.47	140	0.060606061
bst-exactly-7-Node/RepOk_1.cnf	5000	unknown	-	3.31	480	0.118881119	5000	unknown	-	1.84	472	0.1002331
bst-exactly-8-Node/RepOk_1.cnf	5000	unknown	-	18.58	1408	0.015625	5000	unknown	-	5.44	1408	0.015625
bst-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	75.89	4608	0.055121528	5000	unknown	-	13.98	4992	0.026737968
bt-exactly-6-Node/RepOk_1.cnf	9.08	100352	0.055892256	0.6	416	0.165266106	5.08	62464	0.015047613	0.23	132	0
bt-exactly-7-Node/RepOk_1.cnf	197.8	2129920	0.015136719	3.55	1824	0.023026316	176.68	1638400	0.064844784	0.36	472	0.1002331
bt-exactly-8-Node/RepOk_1.cnf	2177.4	57671680	0.0002442	17.82	9984	0.030248397	1787.7	25165824	0.031370799	0.69	1504	0.051748252
bt-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	105.83	65536	0.081166689	5000	unknown	-	1.25	5120	0.053064582
dllist-exactly-6-Node/RepOk_1.cnf	9.31	819200	0.111111111	0.82	1184	0.027777778	6.92	204800	0.059778109	0.21	1024	0
dllist-exactly-7-Node/RepOk_1.cnf	126.81	21495808	0.041269841	2.05	4736	0.072635135	72.47	8781824	-	0.43	4352	0.0625
dllist-exactly-8-Node/RepOk_1.cnf	990.46	587202560	0.125	6.98	22016	0.021802326	724.06	247463936	-	0.62	16128	0.015873016
dllist-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	53.69	102400	-	5000	unknown	-	1.13	70656	0.078125
rbt-exactly-6-Node/RepOk_1.cnf	139.05	15104	0.048888889	0.34	20	0	108.88	12032	0.051932156	0.22	20	0
rbt-exactly-7-Node/RepOk_1.cnf	2439.63	192512	0.091337868	0.84	35	0	1806.55	151552	-	0.36	35	0
rbt-exactly-8-Node/RepOk_1.cnf	5000	unknown	-	4.6	64	0	5000	unknown	-	0.57	64	0
rbt-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	41.93	128	0.049180328	5000	unknown	-	16.05	124	0.016393443
sllist-exactly-6-Node/RepOk_1.cnf	3.2	736	0.022222222	0.01	7	0	2.72	736	0.022222222	0	1	0
sllist-exactly-7-Node/RepOk_1.cnf	91.1	5376	0.066666667	0.02	12	0	97.96	5376	0.066666667	0	1	0
sllist-exactly-8-Node/RepOk_1.cnf	818.21	45056	0.117460317	0.04	30	0	1037.41	45056	0.117460317	0	1	0
sllist-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	0.14	62	0	5000	unknown	-	0	1	0
sortedlist-exactly-6-Node/RepOk_1.cnf	89.6	24064	0.044444444	0.21	62	0	62.27	13312	0.013089802	0.18	32	0
sortedlist-exactly-7-Node/RepOk_1.cnf	1540.12	319488	0.009615385	2.47	160	0.038961039	950.88	184320	0.021028646	0.37	64	0
sortedlist-exactly-8-Node/RepOk_1.cnf	5000	unknown	-	4.69	416	0.034825871	5000	unknown	-	1.84	130	0.015625
sortedlist-exactly-9-Node/RepOk_1.cnf	5000	unknown	-	16.2	1136	0.097584541	5000	unknown	-	2.75	248	0.028225806

TABLE V: Queen Problem with ApproxMC

subjects	No SB Time	No SB Solution	Alloy SB Time	Alloy SB Solution	CNF SB Time	CNF SB Solution
3queen_1/NqueensProblem_1.cnf	0.02	0	0.01	0	0.02	0
3queen_2/NQueensProblem_1.cnf	0.03	0	0.04	0	0.04	0
3queen_3/NQueensProblem_1.cnf	0.04	0	0.04	0	0.04	0
3queen_4/NQueensProblem_1.cnf	2.55	168	0.11	24	0.17	48
3queen_5/NQueensProblem_1.cnf	3.64	1312	3.58	208	2.1	400
3queen_6/NQueensProblem_1.cnf	18.3	6400	2.61	1040	4.14	1984
3queen_7/NQueensProblem_1.cnf	29.9	24064	4.44	3520	12.28	7296
3queen_8/NQueensProblem_1.cnf	107.56	64512	7.94	9728	30.26	18944
3queen_9/NQueensProblem_1.cnf	368.65	176128	12.78	25088	67.43	51200
3queen_10/NQueensProblem_1.cnf	695.55	335872	26.14	57344	153.16	122880
3queen_11/NQueensProblem_1.cnf	1307.04	688128	45.1	114688	280.15	241664
nqueen_1/NQueensProblem_1.cnf	0.01	1	0.01	1	0	1
nqueen_2/NQueensProblem_1.cnf	0.01	0	0.02	0	0.02	0
nqueen_3/NQueensProblem_1.cnf	0.04	0	0.04	0	0.04	0
nqueen_4/NQueensProblem_1.cnf	0.42	48	0.09	2	0.15	11
nqueen_5/NQueensProblem_1.cnf	13.37	1184	0.25	10	9.78	208
nqueen_6/NQueensProblem_1.cnf	98.77	2816	0.29	4	77.17	2560
nqueen_7/NQueensProblem_1.cnf	3727.1	208896	1.14	40	1446.4	67584
nqueen_8/NQueensProblem_1.cnf	5000	unknown	13.67	92	5000	unknown
nqueen_9/NQueensProblem_1.cnf	5000	unknown	16.27	304	5000	unknown
nqueen_10/NQueensProblem_1.cnf	5000	unknown	44.97	784	5000	unknown
nqueen_11_blocked/NQueensProblem_1.cnf	5000	unknown	82.11	1120	5000	unknown
nqueen_11/NQueensProblem_1.cnf	5000	unknown	199.77	2752	5000	unknown

TABLE VI: Alloy with ProjMC

also DistribAndressBook gledUndersAndL, cnf	subjects	No SB Time	No SB Solution	Alloy SB Time	Alloy SB Solution	CNF SB Time	CNF SB Solution
also pistribhadress book 30 how Lenf 5.84816 60.844 1.010128 2247 7.269054 55 also pistribhandr Findsuccessor Works, 17 enf 5000 unknown 5000 u	3						29263
							56438
alloyDestribchordPissActive_Optimal/PissActive_Optimal/PissActive_Optimals 5000 unknown 5000 unkno							unknown
alloyDistrithchmoffShomMe] Learf 371,04377 30,0471-15 5000 unknown 5000 unk		5000	unknown	5000	unknown	5000	unknown
allopDistrithchron/ShowMe_1_Henf	alloyDistrib/chord/FPisActive_9.cnf	5000	unknown	5000	unknown	5000	unknown
alloyDistrib/cherd/ShowMc2_15.cnf	alloyDistrib/chord/SameFP_10.cnf	5000	unknown	5000	unknown	5000	unknown
allop	alloyDistrib/chord/ShowMe1_14.cnf	317.103477	3.04E+15	315.609513	3.04E+15	5000	unknown
	alloyDistrib/chord/ShowMe2_15.cnf	58.150056	2.85E+18	58.341679	2.85E+18	5000	unknown
alloyDistrib/chordbugmodel/ShowMcCord_2	alloyDistrib/chord/ShowMeFC_4.cnf	0.029493	10888442	0.030288	10888442	0.064219	5752942
alop	alloyDistrib/chordbugmodel/ShowMe3_4.cnf	5000	unknown	5000	unknown	5000	unknown
allop	alloyDistrib/chordbugmodel/ShowMeCorrectSuccessorEg_3.cnf	2.611185	90699264	2.602715	90699264	154.309598	48498912
alloyDistrib/filestrar-K-state/TwoFrivileged_2.enf 587,731231 518598144 583,400961 518598144 81,330058 273677 alloyDistrib/firewite/Execution_1.enf 5000 unknown 5000 unk			6.23E+18		6.23E+18		unknown
alop Distrib/file_system/check51_Lenf	alloyDistrib/chordbugmodel/StrongerFindSuccessorWorks_6.cnf						unknown
alloyDistrib/firewire/Election Southness Southne	alloyDistrib/dijkstra-K-state/TwoPrivileged_2.cnf				518598144		273677952
allolypistrib/firewire/CarecutallyElected_7.cnf 5000 unknown 5000	alloyDistrib/file_system/check\$1_1.cnf		unknown		unknown		unknown
allopDistribfirewireOneEventuallyElected_7.cnf 5000 unknown 5000	alloyDistrib/firewire/ElectionHappens_2.cnf		unknown		unknown		unknown
alloyDistrib/handshake/P10_1.cnf							unknown
S000 unknown S000							unknown
S000 unknown S000							40320
AlloyDistrib/hoto23/NoBadEntry_Lenf 240.815937 223552 2.097346 166 184.274995 44 180/Distrib/hoto23/NoBadEntry_Lenf 240.815937 223552 2.097346 166 184.274995 44 180/Distrib/hitof/hoto23/NoBadEntry_Lenf 240.815937 223552 2.097346 2.097346 166 184.274995 34 180/Distrib/hitof/hoto23/NoBadEntry_Lenf 2.09874 2.097346 2.0987346 1.0980 2.0987346 1.0980 2.0987346 2.0987							unknown
AlloyDistrib/paratypes/Show_Lenf	-						unknown
AlloyDistrib/Javatypes/Show_Lenf	-						unknown
AlloyDistrib/life/Show 2_cnf							45760
South Sout							37159
AlloyDistrib/mediaAssets/CutPaste_2.cnf 616.242308 135925452 3.770258 135780 206.440908 12271 alloyDistrib/mediaAssets/CutPaste_2.cnf 616.242308 135925452 3.770258 135780 206.440908 12271 alloyDistrib/mediaAssets/PasteCut_3.cnf 491.210215 60913296 3.193336 64280 119.34025 5448 alloyDistrib/messaging/OutOfOrder_2.cnf 5000 unknown							12960
AlloyDistrib/mediaAssets/CutPaste_2.cnf							unknown
AlloyDistrib/mediaAssets/PasteCut_3.cnf							962
South Sout							12271675
alloyDistrib/messaging/SomeState_Lcnf							5448489
Section			J				unknown
AlloyDistrib/origin-tracking/check\$2_2.cnf 189.062095 2505600 0.191379 276 189.05232 1346 189.05175 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 1.938304 2160 0.052105 30 0.391705 2480105							6632609
AlloyDistrib/p303-hotel/NoIntruder_1.cnf 1.938304 2160 0.052105 30 0.391705							213909504
AlloyDistrib/p303-hotel/NoIntruder_2.cnf 32.461941 19584 0.240147 17 10.190272 42 10.0015trib/paragraph-numbering/AddNeverReduces_2.cnf 5000 unknown 3888 57.888277 23 24 22.07414 51 25 25 25 25 25 25 25							1346760
alloyDistrib/paragraph-numbering/AddNeverReduces_2.cnf 5000 unknown 3.453271 92 5000 unknown 3.453271 92 5000 unknown							540
alloyDistrib/peterson/ThreeRun_2.cnf 5000 unknown 5000 unknown 1000 unknown 10000 unknown 10000 unknown 10000 unknown 10000 unkno							4522
AlloyDistrib/peterson/TwoRun_1.cnf 78.229735 3888 77.863812 3888 57.888277 22 22 24 22 24 22 24							unknown
South							unknown
AlloyDistrib/philosophers/run\$1_1.cnf 26.28695 53136 0.979848 2214 22.07414 51 21 21 21 21 22.07414 51 21 21 21 22 24 23.07414 51 21 24 23.07414 51 23 24 24 23.07414 51 24 24 23.07414 51 24 24 23.07414 51 24 24 23.07414 51 24 24 23.07414 51 24 24 23.07414 24 24 24 23.07414 25 24 24 24 24 24 24 2							2592
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alloyDistrib/queens/run\$1_1.cnf 5000 unknown 3.453271 92 5000 unkn alloyDistrib/railway/PolicyWorks_1.cnf 0.187005 471648 0.18967 471648 0.147073 127	, , , , , , , , , , , , , , , , , , , ,						51684 12294
AlloyDistrib/railway/PolicyWorks_1.cnf Col. 187005 471648 Col. 18967 471648 Col. 147073 1273							
alloyDistrib/railway/TrainsMoveLegal_2.cnf 2734.250715 3.46E+12 2731.438963 3.46E+12 alloyDistrib/railway/TrainsMoveLegal_2.cnf 5000 unknown 5000 unknown 5000 alloyDistrib/stable_ringlead/CBadLivenessTrace_5.cnf 4.638441 5184 4.53055 5184 4.414321 2 alloyDistrib/view-backing/zippishOK_1.cnf 5000 unknown 5000 unknown 5000 unknown 5000 unknown 5000 unknown 5000 unknown 3.495476 97248 5000 unkn 5000 unknown 238.358967 1344 5000 unkn 5000 unkn 40320 3.059277 1 3086.041182 44 60404 15/alloy/Handshake/1.cnf 5000 unknown 23.116591 390902 5000 unkn 60406_15/alloy/Pigeonhole/1.cnf 5000 unknown 0.68206 1 5000 unkn 60406_15/alloy/Pigeonhole/1.cnf 583.69268 94296832 0.891002 3632 523.982152 36761 5000 unkn 60406_15/csp/GlochedNQueens/1.cnf							
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kodkod_15/alloy/FileSystem/1.cnf 5000 unknown 3.495476 97248 5000 unknown kodkod_15/alloy/GroupScheduling/1.cnf 5000 unknown 238.358967 1344 5000 unknown kodkod_15/alloy/Handshake/1.cnf 1969.606439 40320 3.059277 1 3086.041182 4C kodkod_15/alloy/Lists/1.cnf 5000 unknown 23.116591 390902 5000 unknown kodkod_15/alloy/Pigeonhole/1.cnf 5000 unknown 0.68206 1 5000 unknown kodkod_15/alloy/ToyLists/1.cnf 583.369268 94296832 0.891002 3632 523.982152 36761 kodkod_15/csp/BlockedNQueens/1.cnf 5000 unknown 3.749441 325 5000 unkn kodkod_15/csp/GraphColoring/1.cnf 42.810665 50693280 43.397577 2112220 95.228553 7725 kodkod_15/csp/GraphColoring/1.cnf 5000 unknown 5000 unknown 5000 unknown 5000 unknown 5000 unknown 6 48.01							unknown
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kodkod_15/csp/BlockedNQueens/1.cnf 5000 unknown 3.749441 325 5000 unkn kodkod_15/csp/GraphColoring/1.cnf 42.810665 50693280 43.397577 2112220 95.228553 7725 kodkod_15/csp/GraphColoring/1.cnf 5000 unknown 5000 unknown 5000 unknown 5000 unknown 6 48.014137 48.04643 7 1.406194 6 48.014137 48.04643 6 48.04643 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.04643 6 6 48.046443 6 6 48.046444 6 6 48.046444 6 6 48.046444 6 6 48.046444 6				l .	_		36761824
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kodkod_15/csp/GraphColoring2/1.cnf 5000 unknown 5000 unknown 5000 unknown kodkod_15/csp/LatinSquare/1.cnf 49.548002 720 1.406194 6 48.014137 kodkod_15/csp/NQueens/1.cnf 5000 unknown 0.555518 92 5000 unkn							7729042
kodkod_15/csp/LatinSquare/1.cnf 49.548002 720 1.406194 6 48.014137 kodkod_15/csp/NQueens/1.cnf 5000 unknown 0.555518 92 5000 unkn							unknown
kodkod_15/csp/NQueens/1.cnf 5000 unknown 0.555518 92 5000 unkn							360
	_ • •	l .					unknown
VOGVOG 12/IDID/CVRI 1112/1 CDT NIDE NIDE NIDE NIDE NIDE NIDE NIDE NIDE	kodkod_15/tptp/GEO115/1.cnf	5000	unknown	5000	unknown	5000	unknown
							unknown

TABLE VII: Data Structures with ProjMC

subjects	No SB Time	No SB Solution	Alloy SB Time	Alloy SB Solution	CNF SB Time	CNF SB Solution	Manual SB Time	Manual SB Solution
bst-exactly-6-Node/RepOk_1.cnf	139.144231	95040	0.350502	132	136.760792	89688	0.424422	132
bst-exactly-7-Node/RepOk_1.cnf	5000	unknown	3.115373	429	5000	unknown	2.02654	429
bst-exactly-8-Node/RepOk_1.cnf	5000	unknown	22.945739	1430	5000	unknown	9.733099	1430
bst-exactly-9-Node/RepOk_1.cnf	5000	unknown	195.920678	4862	5000	unknown	65.969943	4862
bt-exactly-6-Node/RepOk_1.cnf	5.575678	95040	0.100269	357	7.397723	61538	0.031748	132
bt-exactly-7-Node/RepOk_1.cnf	129.25605	2162160	0.703432	1866	184.976535	1538628	0.095038	429
bt-exactly-8-Node/RepOk_1.cnf	3673.890522	57657600	4.948797	10286	3466.195577	25955296	0.342363	1430
bt-exactly-9-Node/RepOk_1.cnf	5000	unknown	40.215615	60616	5000	unknown	1.488686	4862
dllist-exactly-6-Node/RepOk_1.cnf	9.512672	737280	0.925232	1152	41.883334	193248	0.009831	1024
dllist-exactly-7-Node/RepOk_1.cnf	69.122924	20643840	14.497965	5080	5000	unknown	0.009311	4096
dllist-exactly-8-Node/RepOk_1.cnf	1765.434646	660602880	115.549873	22496	5000	unknown	0.013257	16384
dllist-exactly-9-Node/RepOk_1.cnf	5000	unknown			5000	unknown	0.012906	65536
rbt-exactly-6-Node/RepOk_1.cnf	196.112366	14400	1.339152	20	215.577983	11438	0.548183	20
rbt-exactly-7-Node/RepOk_1.cnf	4137.857859	176400	7.998439	35	5000	unknown	1.576726	35
rbt-exactly-8-Node/RepOk_1.cnf	5000	unknown	49.852873	64	5000	unknown	5.491503	64
rbt-exactly-9-Node/RepOk_1.cnf	5000	unknown	1005.486166	122	5000	unknown	22.484273	122
sllist-exactly-6-Node/RepOk_1.cnf	0.458154	720	0.014197	7	0.574255	720	0.008449	1
sllist-exactly-7-Node/RepOk_1.cnf	4.901807	5040	0.043722	12	5.87483	5040	0.00749	1
sllist-exactly-8-Node/RepOk_1.cnf	60.091736	40320	0.118694	30	65.634922	40320	0.008031	1
sllist-exactly-9-Node/RepOk_1.cnf	1302.051768	362880	0.440528	62	1306.623466	362880	0.008169	1
sortedlist-exactly-6-Node/RepOk_1.cnf	254.48917	23040	1.680999	62	188.180552	13140	0.433474	32
sortedlist-exactly-7-Node/RepOk_1.cnf	4518.106749	322560	7.346341	154	3933.05488	188196	1.11685	64
sortedlist-exactly-8-Node/RepOk_1.cnf	5000	unknown	18.240917	402	5000	unknown	2.314642	128
sortedlist-exactly-9-Node/RepOk_1.cnf	5000	unknown	49.678698	1035	5000	unknown	7.847462	255