Table 1: A performance comparison between the $\epsilon$-constraint and BOBLB&B&C algorithms.

| Instance | n | m | $\epsilon$-constraint Time(s) | B&B Time(s) | #Nodes | EPB B&C (ISC) ($|\Lambda|$) Time(s) | #Nodes | Cut&Branch Time(s) | #Nodes |
|---|---|---|---|---|---|---|---|---|---|
| AP_p-3_n-10_ins-1 | 100 | 20 | 7.17 | 9.41 | 3491 | 12.25 | 909 | 10.12 | 3491 |
| AP_p-3_n-10_ins-10 | 100 | 20 | 5.9 | 10.08 | 4165 | 16.74 | 2365 | 10.28 | 4165 |
| AP_p-3_n-10_ins-2 | 100 | 20 | 6.19 | 10.86 | 4307 | 10.46 | 810 | 11.85 | 4307 |
| AP_p-3_n-10_ins-3 | 100 | 20 | 8.1 | 8.25 | 3501 | 11.45 | 1066 | 8.75 | 3501 |
| AP_p-3_n-10_ins-4 | 100 | 20 | 5.72 | 8.63 | 3881 | 9.18 | 726 | 8.98 | 3881 |
| AP_p-3_n-10_ins-5 | 100 | 20 | 4.84 | 7.99 | 3143 | 7.78 | 739 | 8.09 | 3143 |
| AP_p-3_n-10_ins-6 | 100 | 20 | 6.9 | 9.55 | 3907 | 7.49 | 544 | 10.1 | 3907 |
| AP_p-3_n-10_ins-7 | 100 | 20 | 6.45 | 9.45 | 2907 | 9.65 | 709 | 9.38 | 2907 |
| AP_p-3_n-10_ins-8 | 100 | 20 | 4.9 | 4.52 | 1469 | 6.94 | 851 | 4.72 | 1469 |
| AP_p-3_n-10_ins-9 | 100 | 20 | 6.37 | 10.76 | 4549 | 10.32 | 792 | 11.26 | 4549 |
| AP_p-3_n-15_ins-1 | 225 | 30 | 5.1 | 111.34 | 20615 | 120.07 | 4870 | 123.3 | 20615 |
| AP_p-3_n-15_ins-10 | 225 | 30 | 7.19 | 115.52 | 21249 | 140.78 | 3979 | 121.3 | 21249 |
| AP_p-3_n-15_ins-2 | 225 | 30 | 7.35 | 118.1 | 24051 | 136.88 | 4049 | 126.86 | 24051 |
| AP_p-3_n-15_ins-3 | 225 | 30 | 5.64 | 53.85 | 11273 | 82.99 | 4056 | 58.79 | 11273 |
| AP_p-3_n-15_ins-4 | 225 | 30 | 7.62 | 181.38 | 30331 | 189.46 | 4947 | 188.62 | 30331 |
| AP_p-3_n-15_ins-5 | 225 | 30 | 8.07 | 135.79 | 27683 | 138.58 | 5071 | 159.43 | 27683 |
| AP_p-3_n-15_ins-6 | 225 | 30 | 8.15 | 111.16 | 18839 | 128.0 | 4527 | 126.13 | 18839 |
| AP_p-3_n-15_ins-7 | 225 | 30 | 8.04 | 134.2 | 22535 | 141.3 | 6147 | 134.14 | 22535 |
| AP_p-3_n-15_ins-8 | 225 | 30 | 6.01 | 40.42 | 9469 | 39.43 | 1707 | 43.61 | 9469 |
| AP_p-3_n-15_ins-9 | 225 | 30 | 7.41 | 131.11 | 27365 | 147.98 | 4676 | 145.22 | 27365 |
| AP_p-3_n-20_ins-1 | 400 | 40 | 12.17 | 823.2 | 77327 | 725.31 | 13484 | 921.7 | 77323 |
| AP_p-3_n-20_ins-10 | 400 | 40 | 13.15 | 1177.87 | 122467 | 1012.56 | 18151 | 1314.45 | 122467 |
| AP_p-3_n-20_ins-2 | 400 | 40 | 9.16 | 1161.3 | 99601 | 915.93 | 15870 | 1286.49 | 99601 |
| AP_p-3_n-20_ins-3 | 400 | 40 | 11.22 | 679.35 | 66665 | 496.03 | 12100 | 815.96 | 66665 |
| AP_p-3_n-20_ins-4 | 400 | 40 | 7.52 | 991.4 | 102973 | 568.75 | 12072 | 1172.07 | 102973 |
| AP_p-3_n-20_ins-5 | 400 | 40 | 10.2 | 762.87 | 79195 | 795.12 | 17529 | 872.47 | 79195 |
| AP_p-3_n-20_ins-6 | 400 | 40 | 8.37 | 537.29 | 50289 | 383.72 | 9246 | 591.7 | 50289 |
| AP_p-3_n-20_ins-7 | 400 | 40 | 10.18 | 1190.8 | 110271 | 652.58 | 11912 | 1338.25 | 110271 |
| AP_p-3_n-20_ins-8 | 400 | 40 | 10.4 | 885.65 | 83845 | 717.04 | 11571 | 1021.36 | 83845 |
| AP_p-3_n-20_ins-9 | 400 | 40 | 10.12 | 1186.97 | 118453 | 673.48 | 12486 | 1336.44 | 118453 |
| AP_p-3_n-25_ins-1 | 625 | 50 | 14.35 | TL | 115909 | TL | 33918 | TL | 81647 |
| AP_p-3_n-25_ins-10 | 625 | 50 | 15.06 | TL | 83681 | TL | 33337 | TL | 65783 |
| AP_p-3_n-25_ins-2 | 625 | 50 | 10.54 | TL | 151141 | 1972.89 | 23776 | TL | 128251 |
| AP_p-3_n-25_ins-3 | 625 | 50 | 15.26 | TL | 96201 | TL | 30029 | TL | 78001 |
| AP_p-3_n-25_ins-4 | 625 | 50 | 10.23 | 3484.94 | 206757 | 2044.95 | 27210 | TL | 151073 |
| AP_p-3_n-25_ins-5 | 625 | 50 | 13.18 | TL | 108159 | 2896.01 | 37541 | TL | 99555 |
| AP_p-3_n-25_ins-6 | 625 | 50 | 12.14 | TL | 119229 | TL | 31162 | TL | 91257 |
| AP_p-3_n-25_ins-7 | 625 | 50 | 11.24 | TL | 139233 | TL | 41210 | TL | 93361 |
| AP_p-3_n-25_ins-8 | 625 | 50 | 13.65 | TL | 93657 | 2196.58 | 23162 | TL | 76883 |
| AP_p-3_n-25_ins-9 | 625 | 50 | 16.17 | TL | 72991 | TL | 31436 | TL | 58843 |