|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 155453412 | 324713 | 6314894 | 4460580 | 324587 | 155018139 |
| tot-info | 343794012 | 914216 | 9421218 | 6028274 | 813962 | 344218927 |
| schedule | 423711841 | 658117 | 99206234 | 67951084 | 646142 | 423201986 |

**Cost** of the optimal test suite for **three** objectives

**Cost** of the optimal test suite for **four** objectives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 155018139 | 324689 | 52826884 | 2826139 | 433530 | 139448744 |
| tot-info | 370430142 | 819494 | 73531856 | 538881 | 866422 | 370844225 |
| schedule | 473340145 | 711504 | 206571269 | 5455943 | 501890 | 473918585 |

**Cost** of the optimal test suite for **five** objectives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 139770145 | 324765 | 8812575 | 5550122 | 433530 | 140536597 |
| tot-info | 288552008 | 1131344 | 200835 | 1779172 | 1474764 | 353529021 |
| schedule | 472418486 | 887524 | 49691989 | 11984457 | 706041 | 474636551 |

Normalized **HV** for SIR Programs With **Three** Objectives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 0.180198 | 0.998968 | 0.963383 | 0.973733 | 1.000000 | 0.178389 |
| tot-info | 0.201014 | 0.997991 | 0.973234 | 0.981369 | 0.999984 | 0.198918 |
| schedule | 0.320396 | 0.998433 | 0.832326 | 0.886112 | 0.999412 | 0.311809 |

Normalized **HV** for SIR Programs with **Four** Objectives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 0.138366 | 0.999032 | 0.712001 | 0.982946 | 1.000000 | 0.26311 |
| tot-info | 0.138963 | 0.998415 | 0.816236 | 0.998409 | 0.999988 | 0.138306 |
| schedule | 0.241152 | 0.99862 | 0.652095 | 0.989736 | 0.999995 | 0.237416 |

Normalized **HV** for SIR Programs with **Five** Objectives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEA/D-PBI | MOEA/D-TCH | MOEA/D-WS | NSGA-II | SPEA2+SDE |
| tcas | 0.120208 | 0.998952 | 0.935984 | 0.962149 | 0.999965 | 0.115347 |
| tot-info | 0.171396 | 0.997328 | 0.996585 | 0.997245 | 0.999927 | 0.126836 |
| schedule | 0.110158 | 0.998362 | 0.89308 | 0.970386 | 0.999948 | 0.107362 |

Statistical test, 3-obj, Tcas

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEAD\_WS | MOEAD-PBI | MOEAD-TCH | NSGA-II |
| MOEAD\_WS | 0.000/1.215 |  |  |  |  |
| MOEAD-PBI | 0.000/1.215 | 0.000/1.215 |  |  |  |
| MOEAD-TCH | 0.000/1.215 | 0.000/-1.058 | 0.000/-1.215 |  |  |
| NSGA-II | 0.000/1.215 | 0.000/1.215 | 0.000/-1.215 | 0.000/1.215 |  |
| SPEA2+SDE | 0.006/-0.505 | 0.000/-1.215 | 0.000/-1.215 | 0.000/1.215 | 0.000/-1.215 |

Statistical test, 3-obj, tot\_info

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEAD\_WS | MOEAD\_PBI | MOEAD\_TCH | NSGA-II |
| SPEA2+SDE | 0.000/  1.21467 | 0.000/  1.21467 | 0.000/  1.21467 | 0.000/  1.21467 | 0.000/  -1.21467 |
| NSGA-II | 0.000/  1.21467 | 0.000/  1.21467 | 0.000/  1.21467 | 0.000/  1.21467 |  |
| MOEAD\_TCH | 0.000/  1.21467 | 0.290/  -0.19298 | 0.000/  -1.21467 |  |  |
| MOEAD\_PBI | 0.000/  1.21467 | 0.000/  1.21467 |  |  |  |
| MOEAD\_WS | 0.000/  1.21467 |  |  |  |  |

Statistical test, 3-obj, Schedule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | IBEA | MOEAD\_WS | MOEAD-PBI | MOEAD-TCH | NSGA-II |
| MOEAD\_WS | 0.000/1.214 |  |  |  |  |
| MOEAD-PBI | 0.000/1.214 | 0.000/1.214 |  |  |  |
| MOEAD-TCH | 0.000/1.214 | 0.290/-1.057 | 0.000/-1.214 |  |  |
| NSGA-II | 0.000/1.214 | 0.000/1.214 | 0.000/1.214 | 0.000/1.214 |  |
| SPEA2+SDE | 0.000/1.214 | 0.000/1.214 | 0.000/1.214 | 0.000/1.214 | 0.000/-1.214 |