|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Problem Name** | **Folder Name** | **Truth Source** | **MATLAB Prototype** | **CSALT** | **SOS** | **(MATLAB-truth)/truth** |
| Rayleigh  (control path constraint) | Rayleigh | SOS | 44.72093885 | 44.804446275  (Check-identical to S&P?) | 44.7209362 | 5.925E-08 |
| Rayleigh  (state and path constraint) | Rayleigh  ControlState  Constraint | SOS | 44.8044450 | 44.804446275 | 44.8044433 | 3.794E-08 |
| Goddard Rocket Problem | GoddardRocket\_ThreePhase | SOS | 18550.873 |  | 18550.872 | 5.390E-08 |
| HyperSensitive | Hypersensitive | SOS | 6.72412985 | 1.1477935526 | 6.72412325 | 9.815E-07 |
| Conway Low Thrust | ConwayOrbitExample | SOS | 9.51233830E-02 (RK)  9.5158302020E-03 (Radau) | (Radau) | 9.51233834E-2 | -4.015E-09 |
| Linear Tangent Steering | LinearTangent  Steering | SOS | 5.54570878E-01 | 5.5457087823E-01 | 5.54570879E-1 | -1.803E-09 |
| Brachistichrone | Brachistichrone | SOS | 3.12480130E-1 | 3.1248013071E-1 | 3.12480130E-1 | 0.0\* |
| Schwartz | Schwartz | PSOPT | 2.3530487852E-14 | 2.4988729593E-14 | 4.634554e-15 | 0.0\* |
| Bryson Denham | BrysonDenham | PSOPT | 3.9999973492 |  | 3.999539 | 0.0^ |
| Interior Point Constraint | InteriorPoint | PSOPT | 9.205314E-01 |  | 9.205314e-01 | 0.0\* |
| Bryson Maximum Range | BrysonMaxRange | PSOPT | -1.712315 |  | -1.712316 | -5.840E-7 |
| Obstacle Avoidance | ObstacleAvoidance | PSOPT | 4.571044 |  | 4.571044 | 0.0\* |
| Moon Lander | MoonLander | PSOPT | 1.4203135394 | 1.4203188516 | 1.420377e+00 | -4.467e-05 |
| Rao Automatica | RauAutomatica | Analytic | -8.9637968028E-03 | -8.9637968029E-03 | 8.96379680285788E-3 | -6.457e-12 |

**Table** 1**: Comparison of Optimal Solutions of Cost Function Value from GMAT Prototype and SOS**

\*Solution matches to all significant figures in the provided test data

^ Solutions match to tolerances used in the NLP problem configuration