Benchmark models with JuMP and OptimalControl max iter = 1000, tol = 1.0e-8, constr viol tol = 1.0e-6, solver = ma57 Solver Model Discretization Variables Constraints Iterations Total Time Ipopt Time Objective Value Flag JuMP 18 2.75Solve Succeeded robot 100 910 6122.759.14269robot JuMP 400 3610 2412 20 0.220.219.14103 Solve Succeeded OptimalControl 100 20 1.73 0.1Solve Succeeded robot 910 6129.142OptimalControl 400 49 15.11 14.74 Solve Succeeded robot 3610 2412 9.14099

304

1204

304

1204

407

1607

407

1607

204

804

305

1205

19

40

22

30

223

497

169

1000

21

0.03

0.24

0.1

1.18

3.09

73.81

2.87

21.99

0.1

0.02

2.87

0.9

0.03

0.24

0.05

1.03

3.09

73.74

0.69

21.83

0.01

0.02

0.26

0.73

1.01283

1.01284

1.01283

1.01284

1254.61

1247.97

1254.78

107.51

1.24629e8

4.93167e8

1.22906e6

1.22861e6

Solve Succeeded

Iterations Exceeded

Solve Succeeded

Solve Succeeded

Solve Succeeded

Solve Succeeded

rocket

rocket

rocket

rocket

glider

glider

glider

glider

electrical_vehicle

electrical vehicle

electrical_vehicle

electrical_vehicle

JuMP

JuMP

OptimalControl

OptimalControl

JuMP

JuMP

OptimalControl

OptimalControl

JuMP

JuMP

OptimalControl

OptimalControl

100

400

100

400

100

400

100

400

100

400

100

400

405

1605

405

1605

506

2006

506

2006

303

1203

404

1604