

## Benchmark JuMP Results

max iter = 1000, tol = 1.0e-8, constr viol tol = 1.0e-6, solver = ma57

Model	Discretization	Variables	Constraints	Iterations	Total Time	Ipopt Time	Objective Value	Flag
cart_pendulum	100	507	405	205	1.8	1.79	1.49212	Infeasible Problem
cart_pendulum	500	2507	2005	678	236.16	235.55	1.35555	Infeasible Problem
robot	100	910	612	18	2.12	2.1	9.14269	Solve Succeeded
robot	500	4510	3012	21	0.71	0.66	9.14099	Solve Succeeded
insurance	100	809	708	49	0.77	0.67	20.9217	Solve Succeeded
insurance	500	4009	3508	153	1.72	1.63	103.303	Solve Succeeded
robbins	100	404	306	20	0.17	0.01	227.055	Solve Succeeded
robbins	500	2004	1506	31	0.05	0.04	1000.13	Solve Succeeded
electrical_vehicle	100	303	204	5	0.01	0.0	1.24629e8	Solve Succeeded
electrical_vehicle	500	1503	1004	5	0.07	0.02	6.16023e8	Solve Succeeded
double_oscillator	100	505	402	4	0.0	0.0	0.014816	Solve Succeeded
double_oscillator	500	2505	2002	4	0.01	0.01	0.0728525	Solve Succeeded
ducted_fan	100	809	612	59	1.45	1.29	1911.53	Solve Succeeded
ducted_fan	500	4009	3012	67	21.23	21.22	1909.53	Solve Succeeded
steering	100	506	408	11	0.03	0.02	0.554595	Solve Succeeded
steering	500	2506	2008	17	0.3	0.29	0.554572	Solve Succeeded
rocket	100	405	304	19	0.07	0.07	1.01283	Solve Succeeded
rocket	500	2005	1504	59	0.57	0.56	1.01284	Solve Succeeded
chain	100	404	305	7	0.01	0.01	5.06978	Solve Succeeded
chain	500	2004	1505	8	0.05	0.04	5.06858	Solve Succeeded
beam	100	303	204	19	0.01	0.01	912.128	Solve Succeeded
beam	500	1503	1004	29	0.04	0.04	4466.86	Solve Succeeded
dielectrophoretic_particle	100	304	203	39	0.03	0.03	-9.97699e-9	Infeasible Problem
dielectrophoretic_particle	500	1504	1003	39	4.04	4.04	-9.99545e-9	Infeasible Problem
jackson	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
vanderpol	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
quadrotor	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
moonlander	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
glider	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
truck_trailer	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
bioreactor	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
space_shuttle	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN