Recent Progress with an Interior-Point Method for Large-Scale Nonlinear Programming

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joint work with Hande Y. Benson and David F. Shanno

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1 Outline

- The Basic Interior-Point Paradigm (for LP/QP)

- Computational Results

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2 Introduce Slack Variables

- Start with an optimization problem—for now, the simplest NLP:

$$\begin{aligned} \text{minimize} \quad & f(x) \\ \text{subject to} \quad & h_i(x) \geq 0, \qquad i = 1, \ldots, m \end{aligned}$$

- Introduce slack variables to make all inequality constraints into nonnegativities:

$$\begin{aligned} \text{minimize} \quad & f(x) \\ \text{subject to} \quad & h(x) - w = 0, \\ & w \geq 0 \end{aligned}$$

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- Replace nonnegativity constraints with logarithmic barrier terms in the objective:

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First-Order Optimality Conditions

- Incorporate the equality constraints into the objective using Lagrange multipliers:

$$L(x, w, y) = f(x) - \mu \sum_{i=1}^{m} \log(w_i) - y^T(h(x) - w)$$

- Set all derivatives to zero:

$$\begin{aligned} \nabla f(x) - \nabla h(x)^T y &= 0 \\ -\mu W^{-1} e + y &= 0 \\ h(x) - w &= 0 \end{aligned}$$

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- Rewrite system:

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6 Apply Newton's Method

- Apply Newton's method to compute search directions, Δx, Δw, Δy:

$$\begin{bmatrix} H(x,y) & 0 & -A(x)^T \\ 0 & Y & W \\ A(x) & -I & 0 \end{bmatrix} \begin{bmatrix} \Delta x \\ \Delta w \\ \Delta y \end{bmatrix} = \begin{bmatrix} -\nabla f(x) + A(x)^T y \\ \mu e - WYe \\ -h(x) + w \end{bmatrix}.$$

  Here,

$$H(x,y) = \nabla^2 f(x) - \sum_{i=1}^{m} y_i \nabla^2 h_i(x)$$

  and

$$A(x) = \nabla h(x)$$

- Note: $H(x,y)$ is positive semidefinite if f is convex, each h_i is concave, and each $y_i \geq 0$.

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7 Reduced KKT System

- Use second equation to solve for Δw. Result is the reduced KKT system:

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- Iterate:

$$x^{(k+1)} = x^{(k)} + \alpha^{(k)} \Delta x^{(k)}$$
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8 Other Issues

- Merit Function and Step Length Control
- Diagonal Perturbation to Ensure Definiteness
- Anti-Jamming Techniques

Will be covered by Dave Shanno on Thursday (THC-26 in Room IC 105).

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9 Computational Results

Compared:

- LOQO version 5.03 (20000528)
- SNOPT version 5.3-2 (Sep 1999), driver 19981124
- NITRO last week's version

Input/output interface: AMPL with Hessian info.

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The CUTE/Schittkowski Set—Efficiency and Robustness

Size	Probs		SNOPT	NITRO	LOQO	LOQO tuned
Small	618	Solved	585	535	580	23
$n < 100$		Total Time	117.76	603.43	84.94	44.45
Medium	91	Solved	69	63	66	16
$100 \leq n < 1000$		Total Time	678.13	343.35	347.89	536.62
Large	108	Solved	66	80	89	16
$1000 \leq n < 10000$		Total Time	37975.09	7149.45	8152.84	1695.95
Very Large	72	Solved	20	14	51	21
$10000 \leq n$		Total Time	248430.84	1479.29	48936.45	10286.56

11 The CUTE/Schittkowski Set—The Largest Ones

Out of the 72 very large problems, we looked at those which both LOQO and SNOPT solved. There were 14 such problems. From this 14, we have the following total times:

Number	SNOPT	LOQO
14	244604.31	6435.36

We also looked at those which both LOQO and NITRO solved. There were 10 such problems. From this 10, we have the following total times:

Number	NITRO	LOQO
10	1477.01	228.45

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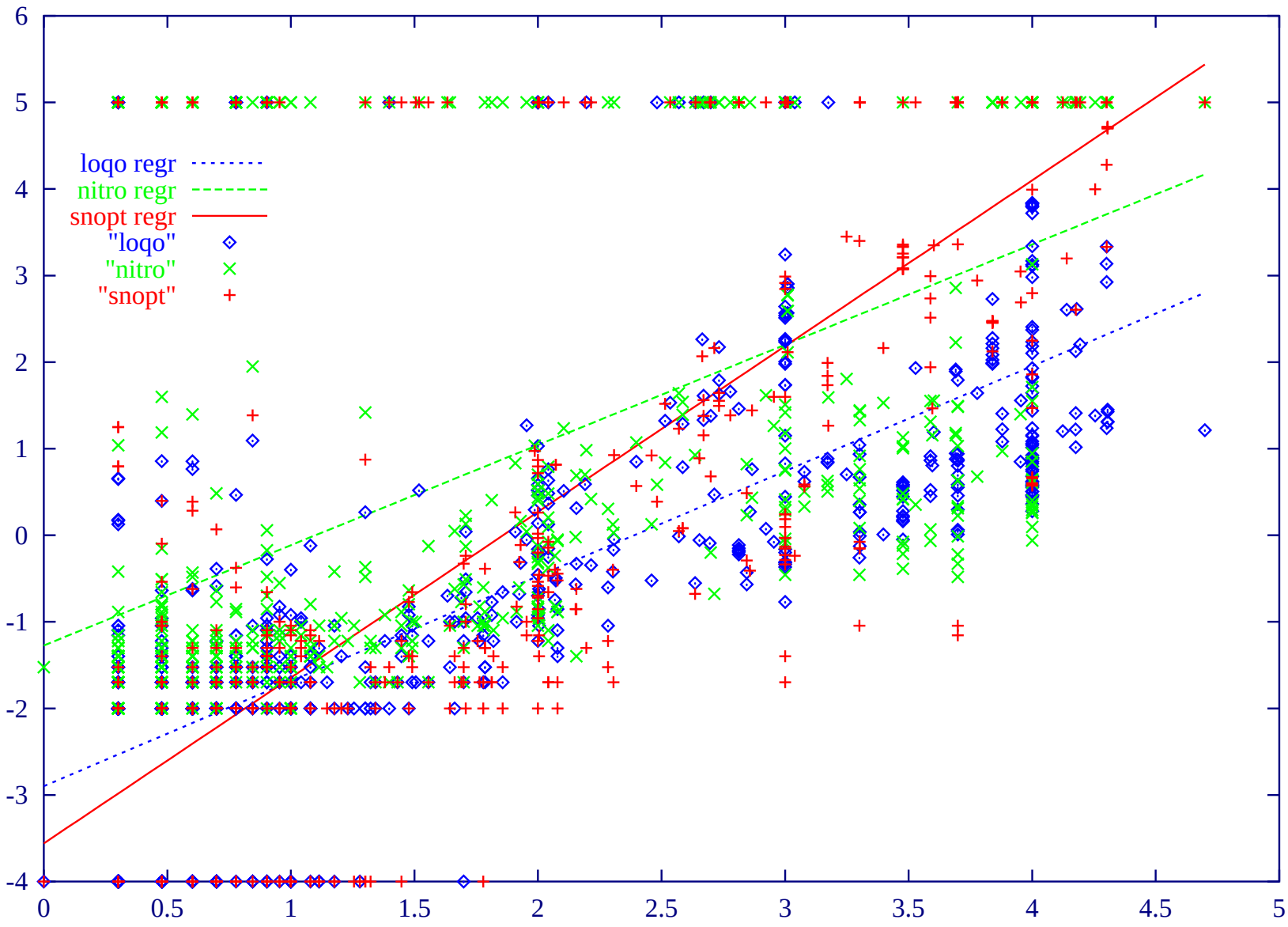
Log-Log Plot of Time vs. Size



Comments

- NITRO has a “premature” stopping rule—usually only achieving 5 digits of accuracy.
- SNOPT and LOQO display similar robustness—NITRO is less robust.
- SNOPT and LOQO are about the same speed on small problems. There is much variability. But when problems get big LOQO is consistently faster than SNOPT.
- NITRO is quite fast on large problems—but it stops with less accuracy.
- NITRO has a hard-coded limit $n \leq 10000$. (Many of the very large problems have $n = 10000$.)
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LOQO Failures

We have identified 5 issues that account for almost all of the LOQO failures:

- Failure to satisfy a constraint qualification. This means no KKT point.
- Unbounded set of optimal solutions. Interior-point methods go to the analytic center, which lies at infinity if the set is unbounded.
- Infeasible or unbounded problem. In nonconvex nonlinear programming, this is harder to detect than in LP.
- Nondifferentiability. If one of the nonlinear functions is not differentiable then one should anticipate trouble, especially if the nondifferentiability happens at the optimal solution.
- Bad Scaling. What can I say, shoot the modeler?

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15 Nondifferentiability—s332.mod

In the Schittkowski model s332.mod, the following expressions appear:

$$\begin{aligned} y_i &= \arctan(\left|(1/t_i - x_1)/(\ln t_i + x_2)\right|), \\ p &= \max y_i, \\ p &\leq 30. \end{aligned}$$

Since $\arctan|x| = |\arctan x|$, the displayed expressions above are equivalent to

$$-30 \leq \arctan((1/t_i - x_1)/(\ln t_i + x_2)) \leq 30.$$

- This system is clearly differentiable, while the original system is not.
- All three codes failed on the problem as initially posed.
- But when restated, all solved the problem easily.
- SNOPT in .04 secs, NITRO in .53 secs, and LOQO in .10 secs.

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16 Tuning

As we saw, LOQO solves most problems with the defaults but tuning did help in some cases. We only adjusted 5 tuning parameters. They are:

- bndpush. Most problems specify initial values for the variables. But, of course, they don't tell us how to initialize the slack variables that we add. `bndpush` gives a lower bound on the initial values for these slacks.
- sigfig. By default, LOQO asks for 8 digits of agreement between the primal and dual objective functions. For some problems this is just too much to expect.
- inftol. By default, LOQO asks for relative infeasibilities to be less than `1.0e-6` before declaring a primal or dual solution feasible. Again, sometimes this is too much to ask for.
- iterlim. By default, LOQO stops after a max of 200 iterations. Sometimes letting it go longer is a good thing.
- convex. Some problems are known to be convex. Asserting that that is the case sometimes helps.

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17 3pk–aug2d

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
3pk	30	0	0.17	0.16	0.01	1.720119E+00	1.720119E+00	1.720119E+00	
aircrfta	5	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
aircrftb	5	0	0.02	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
airport	84	42	0.49	0.25	0.21	4.795270E+04	4.795274E+04	4.795270E+04	
aljazzaf	3	1	0.01	0.15	0	7.500500E+01	7.500503E+01	7.500500E+01	
allinit	3	0	0.01	0.04	0.02	1.670597E+01	1.670597E+01	1.670597E+01	
allinitc	3	1	0.01		0.02	3.047314E+01	ERROR	3.049655E+01	
allinitu	4	0	0	0.01	0	5.744385E+00	5.744385E+00	5.744385E+00	
alsotame	2	1	0.01	0.03	0.01	8.208500E–02	8.208525E–02	8.208500E–02	
argauss	3	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
arglina	100	0	0.11	0.56	1.38	1.000000E+02	1.000000E+02	1.000000E+02	
arglinb	10	0	0	0.01	0.01	4.634146E+00	4.634146E+00	4.634146E+00	
arglinc	8	0	0	0.01	0	6.135135E+00	6.135135E+00	6.135135E+00	
argtrig	100	0	1.83	0.75	0.69	0.000000E+00	0.000000E+00	0.000000E+00	
artif	5000	0		10.75	6.34	(Time)	0.000000E+00	0.000000E+00	
arwhead	5000	0		0.33	3.58	(Time)	0.000000E+00	0.000000E+00	
aug2d	20192	9996	50912.62		26.66	1.687412E+06	ERROR	1.687412E+06	

aug2dc-bigbank

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
aug2dc	20200	9996	49836.58		28.19	1.818393E+06	ERROR	1.818393E+06	
aug2dcqp	20200	9996	52322.27		20.62	6.498179E+06	ERROR	6.498179E+06	
aug2dqp	20192	9996	51493.2		20.32	6.237012E+06	ERROR	6.237012E+06	
aug3d	3873	1000	326.97	1.17	7.33	5.540677E+02	5.540677E+02	5.540677E+02	
aug3dc	3873	1000	983.48	0.86	8.2	7.712624E+02	7.712624E+02	7.712624E+02	
aug3dcqp	3873	1000	543.86	35.54	2.82	9.933621E+02	9.933656E+02	9.933622E+02	
aug3dqp	3873	1000	87.43	20.45	3.33	6.752377E+02	6.752418E+02	6.752377E+02	
avgasa	6	6	0.01	0.05	0.01	-4.168702E+00	-4.168700E+00	-4.168702E+00	
avgasb	6	6	0.01	0.05	0	-4.132819E+00	-4.132819E+00	-4.132819E+00	
avion2	49	15	0.02	0.17	0.19	9.468013E+07	9.468013E+07	9.468017E+07	
bard	3	0	0	0.01	0	8.214877E–03	8.214877E–03	8.214877E–03	
batch	46	69	0.04	1.12	0.1	2.591804E+05	2.591804E+05	2.591804E+05	
bdexp	5000	0		0.97	3.83	(Time)	1.719538E–03	0.000000E+00	
bdqrtic	1000	0	39.65	0.35	0.49	3.983818E+03	3.983818E+03	3.983818E+03	
bdvalue	5000	0	0.07	30.5	1.02	0.000000E+00	0.000000E+00	0.000000E+00	
beale	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
bigbank	1773	814	2814.53	64.04	5.06	-4.205695E+06	-4.205693E+06	-4.205695E+06	t

biggs3-bqp1var

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
biggs3	3	0	0.01	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
biggs5	5	0	0.02	0.04	0.03	5.655650E–03	0.000000E+00	0.000000E+00	
biggs6	6	0	0.03	0.03	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
biggsb1	1000	0		32.28	0.43	(IL)	1.512453E–02	1.500001E–02	
biggsc4	4	7	0	0.06	0.01	-2.437500E+01	-2.450000E+01	-2.450000E+01	t
blockqp1	2005	1001		27.66	0.98	(Time)	-9.964938E+02	-9.965000E+02	
blockqp2	2005	1001		5.8	0.75	(Time)	-9.960949E+02	-9.951000E+02	
blockqp3	2005	1001		26.94	1.85	(Time)	-4.974927E+02	-4.975000E+02	
blockqp4	2005	1001		4.32	1.09	(Time)	-4.980920E+02	-4.980982E+02	
blockqp5	2005	1001		21.27	1.85	(Time)	-4.974935E+02	-4.975000E+02	
bloweya	2002	1002	0.84	8.28	4.7	-8.040000E–06	-1.563419E–02	-4.552552E–02	t
bloweyb	2002	1002	0.71	3.48	8.64	6.030199E–22	2.712506E–02	-3.045254E–02	t
bloweyc	2002	1002	0.7	1.21	2.26	-3.208000E–05	-1.325157E–02	-3.029773E–02	
booth	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
box2	2	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
box3	3	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
bqp1var	1	0	0	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	

bqpgabim-brkmcc

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
bqpgabim	46	0	0.02	0.24	0.01	-3.790340E–05	-3.537070E–05	-3.789657E–05	
bqpgasim	50	0	0.02	0.27	0.02	-5.519814E–05	-5.256934E–05	-5.518949E–05	
brainpc0	6905	6900	132.85		121.67	1.499639E–03	ERROR	1.499638E–03	t
brainpc1	6905	6900	286.54		189.91	8.032039E–08	ERROR	6.611890E–07	t
brainpc2	13805	13800	1577.21		402.03	7.980074E–07	ERROR	6.548094E–07	t
brainpc3	6905	6900	284.97		535.75	2.635539E–07	ERROR	7.237545E–07	t
brainpc4	6905	6900	296.51		144.98	1.294482E–06	ERROR	1.838167E–06	t
brainpc5	6905	6900	300.27		163.42	1.362250E–06	ERROR	2.317698E–06	t
brainpc6	6905	6900	293.33		97.66	5.966850E–08	ERROR	6.074896E–07	t
brainpc7	6905	6900	284.94		97.63	1.535430E–07	ERROR	7.234829E–07	t
brainpc8	6905	6900	295.62		105.95	3.149918E–07	ERROR	7.726758E–07	t
brainpc9	6905	6900	296.7		95.38	8.448288E–07	ERROR	9.661090E–07	t
bratu1d	1001	0		2.59	0.63	(IL)	-8.518927E+00	-8.518927E+00	t
bratu2d	4900	0		15.19	7.58	(Time)	0.000000E+00	0.000000E+00	
bratu2dt	4900	0		14.25	8.82	(Time)	8.019850E–05	0.000000E+00	
bratu3d	3375	0		2.25	85.38	(IL)	0.000000E+00	0.000000E+00	
britgas	450	360	7.76		0.88	0.000000E+00	(IL)	0.000000E+00	
brkmcc	2	0	0.01	0.01	0	1.690427E–01	1.690427E–01	1.690427E–01	

21 brownal-bt6

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
brownal	10	0	0.01	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
brownbs	2	0		0.02	0.01	ERROR	0.000000E+00	0.000000E+00	
brownden	4	0	0.01	0.02	0.01	8.582220E+04	8.582220E+04	8.582220E+04	
broydn3d	10000	0		1.96	3.9	(Time)	0.000000E+00	0.000000E+00	
broydn7d	100	0	0.63			3.821207E+00	(IL)	(IL)	
broydnbd	5000	0		4.31	7.5	(Time)	0.000000E+00	0.000000E+00	
brybnd	5000	0		4.27	7.26	(Time)	0.000000E+00	0.000000E+00	
bt1	2	1	0	0.02	0	-1.000000E+00	-9.999926E–01	-1.000000E+00	
bt10	2	2	0.01	0.02	0.01	-1.000000E+00	-1.000000E+00	-1.000000E+00	
bt11	5	3	0	0.02	0.01	8.248918E–01	8.248906E–01	8.248918E–01	
bt12	5	3	0	0.02	0.01	6.188119E+00	6.188119E+00	6.188119E+00	
bt13	5	1	0.01	0.05	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
bt2	3	1	0.01	0.02	0	3.256820E–02	3.256820E–02	3.256820E–02	
bt3	5	3	0	0.02	0	4.093023E+00	4.093023E+00	4.093023E+00	
bt4	3	2	0	0.02	0.01	-4.551055E+01	-4.551055E+01	-4.551055E+01	
bt5	3	2	0	0.02	0.01	9.617152E+02	9.617152E+02	9.617152E+02	
bt6	5	2	0.01	0.02	0	2.770448E–01	2.770444E–01	2.770448E–01	

bt7-chenhark

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
bt7	5	3	0	0.04	0.02	3.065000E+02	3.065000E+02	3.603798E+02	
bt8	5	2	0	0.02	0.26	1.000000E+00	1.000004E+00	1.000000E+00	
bt9	4	2	0.01	0.03	0.01	-1.000000E+00	-1.000000E+00	-1.000000E+00	
byrdsphr	3	2	0.02	0.02	0.01	-4.683300E+00	-4.683300E+00	-4.683300E+00	
camel6	2	0	0.01	0.03	0	-1.031628E+00	-1.031628E+00	-1.031628E+00	
cantilvr	5	1	0.01	0.04	0.01	1.339956E+00	1.339957E+00	1.339956E+00	
catena	32	11		0.1	0.02	(IL)	-2.307775E+04	-2.307775E+04	
catenary	496	166			0.81	(IL)	(IL)	-3.484032E+05	
cb2	3	3	0	0.04	0.01	1.952224E+00	1.952227E+00	1.952224E+00	
cb3	3	3	0.01	0.03	0	2.000000E+00	2.000004E+00	2.000000E+00	
cbratu2d	882	0		0.12	0.7	(IL)	0.000000E+00	0.000000E+00	
cbratu3d	1024	0	81.33	0.2	2.65	0.000000E+00	0.000000E+00	0.000000E+00	
chaconn1	3	3	0.01	0.04	0	1.952224E+00	1.952227E+00	1.952224E+00	
chaconn2	3	3	0.01	0.03	0	1.999999E+00	2.000004E+00	2.000000E+00	
chainwoo	1000	0			1.49	(IL)	(IL)	6.362471E+01	
chandheq	100	0	0.46	3.18	3.25	0.000000E+00	0.000000E+00	0.000000E+00	
chebyqad	50	0	3.63	335.11	32.43	5.386315E–03	5.386560E–03	5.386315E–03	
chenhark	1000	0		3435.16	0.24	(IL)	-1.994804E+00	-2.000000E+00	

23 chnrosnb-cresc100

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
chnrosnb	50	0	0.25	0.09	0.07	0.000000E+00	0.000000E+00	0.000000E+00	
cliff	2	0	0.01	0.02	0	1.997866E–01	1.997866E–01	1.997866E–01	
clnlbeam	1499	1000	1.79	2.72	13.53	3.500000E+02	3.448775E+02	3.448762E+02	
clplatea	4970	0		3.35	3.02	(Time)	-1.259209E–02	-1.259209E–02	
clplateb	4970	0		13.32	3.49	(Time)	-6.988222E+00	-6.988222E+00	
clplatec	4970	0		20.46	2.6	(IL)	-5.020724E–03	-5.020724E–03	
cluster	2	0	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
concon	15	11	0	0.38	0.08	-6.230796E+03	-6.230796E+03	-6.230796E+03	
congigmz	3	5	0.01	0.05	0.02	2.800000E+01	2.800000E+01	2.800000E+01	
coolhans	9	0	0		0	0.000000E+00	ERROR	0.000000E+00	
core1	65	50	0.02	2.54	0.17	9.105624E+01	9.105637E+01	9.105624E+01	
core2	157	122	0.05	9.59		7.290000E+01	7.290003E+01	(Inf)	
corkscrw	8997	7000	489.2		36.01	9.068782E+01	ERROR	9.068782E+01	
coshfun	61	20	0.41		0.03	-7.732660E–01	(IL)	-7.732666E–01	
cosine	10000	0		4.03	3.57	(Time)	-9.999000E+03	-9.999000E+03	
cragglvy	5000	0		2.17	2.87	(Time)	1.688215E+03	1.688215E+03	
cresc100	6	200	0.25		2.92	5.676027E–01	(IL)	5.676027E–01	t

cresc132-deconvb

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
cresc132	6	2654				ERROR	ERROR	(IL)	
cresc4	6	8	0		0.03	8.718975E–01	(IL)	8.718976E–01	
cresc50	6	100	0.42			5.932657E–01	(IL)	(IL)	
csfi1	5	4	0.01	0.05	0.02	-4.907520E+01	-4.907519E+01	-4.907520E+01	
csfi2	5	4	0	0.08	0	5.501761E+01	5.501762E+01	5.501761E+01	
cube	2	0	0.01	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
curly10	10000	0		1351.55	14.37	(Time)	-1.003163E+06	-1.003163E+06	
curly20	10000	0			27.36	(Time)	ERROR	-1.003163E+06	
curly30	10000	0			44.21	(Time)	(Time)	-1.003163E+06	
cvxbqp1	10000	0	625.45		17.27	2.250225E+06	ERROR	2.250225E+06	
cvxqp1	1000	500	1.53	5.75	6.76	1.087512E+06	1.087519E+06	1.087512E+06	
cvxqp2	10000	2500			1477.47	(Time)	ERROR	8.184246E+07	
cvxqp3	10000	7500	177.15		5248.91	1.157111E+08	ERROR	1.157111E+08	
dallasl	837	598		41.28	1.19	ERROR	-2.026041E+05	-2.026041E+05	
dallasm	164	119		2.62	0.45	ERROR	-4.819819E+04	-4.819819E+04	
dallass	44	29	0.09		0.1	-3.239323E+04	(IL)	-3.239323E+04	
deconvb	51	0	0.16	1.68	0.22	1.134723E–08	2.163616E–06	2.713484E–03	

deconvc-dixchlnv

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
deconvc	51	1	0.58	1.35	0.31	1.137417E–08	1.119780E–05	2.713492E–03	
deconvu	51	0	0.1	0.31	1.1	0.000000E+00	0.000000E+00	0.000000E+00	
degenlpa	20	14	0	0.33	0.03	3.060349E+00	3.024509E+00	3.060349E+00	
degenlpb	20	15	0	0.43	0.01	-3.073125E+01	-3.079632E+01	-3.073125E+01	
demymalo	3	3	0.01	0.04	0.01	-3.000000E+00	-2.999996E+00	-3.000000E+00	
denschna	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
denschnb	2	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
denschnc	2	0	0	0.01	0	1.833617E–01	0.000000E+00	0.000000E+00	
denschnd	3	0	0.01	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
denschne	3	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
denschnf	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
dipigri	7	4	0.01	0.03	0	6.806301E+02	6.806301E+02	6.806301E+02	
disc2	28	23		0.09	0.06	(INF)	1.562501E+00	1.562500E+00	t
discs	33	66			3.3	(INF)	(IL)	1.200008E+01	t
dittert	327	264	33.06	6.91	20.98	-1.997597E+00	-1.997597E+00	-1.997596E+00	t
dixchlng	10	5	0.02	0.03	0.03	2.787315E+03	2.471898E+03	2.471898E+03	
dixchlnv	100	50	1.04	0.47		0.000000E+00	0.000000E+00	(IL)	

dixmaana-dqrtic

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
dixmaana	3000	0	1188.21	0.41	0.89	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaanb	3000	0	1181.46	0.61	1.62	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaanc	3000	0	1211.35	0.76	1.68	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaand	3000	0	1193.73	0.84	1.9	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaane	3000	0	1793.25	2.59	1.45	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaanf	3000	0	1630.75		2.78	1.000000E+00	(IL)	1.000000E+00	
dixmaang	3000	0	1625.11	2.64	3.3	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaanh	3000	0	1625.21	3.04	3.8	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaani	3000	0		10.09	1.5	(IL)	1.000000E+00	1.000000E+00	
dixmaanj	3000	0	2136.06	13.54	3.62	1.000000E+00	1.000000E+00	1.000000E+00	
dixmaank	3000	0	2183.73	10.55	3.85	1.000000E+00	1.000001E+00	1.000000E+00	
dixmaanl	3000	0	2280.44	10.61	4.1	1.000000E+00	1.000001E+00	1.000000E+00	
dixon3dq	10	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
djtl	2	0			0.02	ERROR	ERROR	-8.951545E+03	
dnieper	57	24	0.06	0.09	0.11	1.874402E+04	1.874415E+04	1.874401E+04	
dqdrtic	5000	0		0.47	1.16	(Time)	0.000000E+00	0.000000E+00	
dqrtic	5000	0		2.05	4.95	(UNB)	1.182722E–05	0.000000E+00	

drcav1lq-eigena

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
drcav1lq	10000	0			6754.48	(Time)	(Time)	1.148961E–05	
drcav2lq	10000	0			6865.3	(Time)	(Time)	0.000000E+00	
drcav3lq	10000	0			6232.67	(Time)	(Time)	2.027956E–04	
drcavty1	10000	0			6559.08	(Time)	(Time)	1.148961E–05	
drcavty2	10000	0			6865.3	(Time)	(Time)	0.000000E+00	
drcavty3	10000	0			6267.64	(Time)	(Time)	2.027956E–04	
dtoc1l	14985	9990			16.68	(Time)	ERROR	1.253381E+02	
dtoc1na	1485	990	54.26	3.8	7.67	1.270203E+01	1.270203E+01	1.270203E+01	
dtoc1nb	1485	990	69.15	3.21	6.89	1.593778E+01	1.593778E+01	1.593778E+01	
dtoc1nc	1485	990	97.76	4.25	7.04	2.496981E+01	2.496982E+01	2.496981E+01	
dtoc1nd	735	490	27.71	2.72	5.78	1.239252E+01	1.264446E+01	1.262668E+01	
dtoc2	5994	3996	875.91	4.76	43.82	5.086839E–01	5.086762E–01	5.086762E–01	
dtoc3	14996	9997			25.82	(Time)	ERROR	2.352625E+02	
dtoc4	14996	9997			133.58	(Time)	ERROR	2.868538E+00	
dtoc5	9998	4999		1.84	85.29	(Time)	1.533728E+00	1.535111E+00	
dtoc6	10000	5000		4.28	126.43	(Time)	1.348506E+05	1.348506E+05	
edensch	2000	0	2506.41	0.35	0.55	1.200328E+04	1.200328E+04	1.200328E+04	
eigena	110	0	0.22	1.6	0.56	0.000000E+00	0.000000E+00	0.000000E+00	

eigena2-engval2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
eigena2	110	55	0.84	0.42	4.3	8.250000E+01	8.250000E+01	8.250000E+01	
eigenaco	110	55	0.02	0.08	0.7	0.000000E+00	0.000000E+00	0.000000E+00	
eigenals	110	0	0.34	1.25	3.04	0.000000E+00	0.000000E+00	0.000000E+00	
eigenb	110	0		3.03	2.32	(IL)	0.000000E+00	0.000000E+00	
eigenb2	110	55	0.72	0.84	1.34	1.600000E+00	1.600000E+00	1.600000E+00	t
eigenbco	110	55	0.02	0.06		9.000000E+00	9.000000E+00	(IL)	
eigenbls	110	0		6.19	5.79	(IL)	0.000000E+00	0.000000E+00	
eigenc2	462	231	116.93		182.86	7.718095E+02	ERROR	7.718095E+02	
eigencco	30	15	0.04	0.04	0.15	0.000000E+00	0.000000E+00	0.000000E+00	
eigmaxa	101	101	0.04	0.12	0.24	-1.000000E+00	-1.000000E+00	-2.000000E+00	
eigmaxb	101	101	0.35	0.11	0.14	-2.731566E–01	-7.785812E–02	-8.701304E–03	
eigmaxc	22	22	0.02	0.02	0.01	-1.000000E+00	-1.000000E+00	-2.000000E+00	
eigmina	101	101		0.12	0.22	ERROR	1.000000E+00	1.000000E+00	
eigminb	101	101	0.07	0.11	0.09	9.674354E–04	7.785812E–02	9.674354E–04	
eigminc	22	22	0.01	0.05	0.02	1.000000E+00	1.000000E+00	1.000000E+00	
engval1	5000	0		0.6	1.98	(Time)	5.548668E+03	5.548668E+03	
engval2	3	0	0	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	

errinros-flosp2hm

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
errinros	50	0	0.47	0.1	0.06	3.990415E+01	3.990415E+01	3.990415E+01	
expfit	2	0	0	0.02	0	2.405106E–01	2.405106E–01	2.405106E–01	
expfita	5	21	0.01	0.07	0.01	1.136612E–03	1.137646E–03	1.136612E–03	
expfitb	5	101	0.08	0.23	0.06	5.019366E–03	5.020327E–03	5.019366E–03	
expfitc	5	501	1.17	3.05	0.41	2.330257E–02	2.330363E–02	2.330257E–02	
explin	120	0	0.02	0.89	0.04	-7.237563E+05	-7.237558E+05	-7.237563E+05	
explin2	120	0	0.01	0.86	0.05	-7.244591E+05	-7.244587E+05	-7.244591E+05	
expquad	120	0	0.3	0.13	0.08	-3.624600E+06	-3.624600E+06	-3.624600E+06	
extrasim	2	1	0	0.03	0.01	1.000000E+00	1.000001E+00	1.000000E+00	
extrosnb	10	0	0		0.01	0.000000E+00	ERROR	0.000000E+00	
fccu	19	8	0	0.02	0	1.114911E+01	1.114911E+01	1.114911E+01	
fletcbv3	100	0				(IL)	(IL)	(IL)	
fletchbv	100	0				(IL)	(IL)	(IL)	
fletchcr	100	0	0.93	0.14	0.12	0.000000E+00	0.000000E+00	0.000000E+00	
fletcher	4	4		0.04	0.02	(Inf)	1.952538E+01	1.952537E+01	
flosp2hh	650	0			28.96	(IL)	ERROR	3.887126E+01	
flosp2hl	650	0			0.6	(IL)	(IL)	3.887054E+01	
flosp2hm	650	0			0.64	(IL)	(IL)	3.887126E+01	

flosp2th-gpp

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
flosp2th	650	0			0.67	(IL)	(IL)	1.000000E+01	
flosp2tl	650	0			0.71	(IL)	(IL)	1.000000E+01	
flosp2tm	650	0			0.77	(IL)	(IL)	1.000000E+01	
fminsrf2	15625	0			159.84	(Time)	ERROR	1.000000E+00	t
fminsurf	1024	0	129.99	129.62	368.96	1.000000E+00	1.000000E+00	1.000000E+00	
freuroth	5000	0		1.69	8.72	(Time)	6.081592E+05	6.081592E+05	
gausselm	1495	3690	18.4	39.13		-1.000000E+00	-1.749101E+01	(IL)	
genhs28	10	8	0.01	0.01	0	9.271737E–01	9.271737E–01	9.271737E–01	
genhumps	5	0	0	0.04	0.06	0.000000E+00	0.000000E+00	0.000000E+00	
genrose	500	0				(IL)	(IL)	(IL)	
gigomez1	3	3	0	0.04	0.01	-3.000000E+00	-2.999996E+00	-3.000000E+00	
gilbert	1000	1	699.71	0.91	367.94	4.820273E+02	4.820273E+02	4.820273E+02	
goffin	51	50	0.01	0.74	0.11	0.000000E+00	0.000000E+00	0.000000E+00	
gottfr	2	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
gouldqp2	699	349	3.07	6.64	0.37	1.885513E–04	1.940013E–04	1.879996E–04	
gouldqp3	699	349	0.51	1.7	0.27	2.065155E+00	2.065382E+00	2.065155E+00	
gpp	250	498	3.71	11.79	7.08	1.440093E+04	1.440093E+04	1.440093E+04	

gridneta-hager2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
gridneta	8964	6724	1114.66	25.03	7.06	3.049830E+02	3.049909E+02	3.049830E+02	
gridnetb	13284	6724			15.98	(Time)	ERROR	1.433232E+02	
gridnetc	7564	3844			16.79	(Time)	ERROR	1.618703E+02	
gridnetd	3945	2644	29.25	14.29	6.39	5.664444E+02	5.664467E+02	5.664444E+02	
gridnete	7565	3844		9.36	12.07	(Time)	2.065547E+02	2.065547E+02	
gridnetf	7565	3844			25.41	(Time)	ERROR	2.421090E+02	
gridnetg	44	34	0.01	0.09	0.03	7.331703E+01	7.331703E+01	7.331703E+01	
gridneth	61	36	0.05	0.09	0.02	3.962627E+01	3.962627E+01	3.962627E+01	
gridneti	61	36	0.05	0.13	0.03	4.024746E+01	4.024749E+01	4.024746E+01	
grouping	100	125	0.01		0.11	1.385040E+01	ERROR	1.385040E+01	
growth	3	0	0	0.11	0.02	3.542149E+03	1.004041E+00	1.004041E+00	
growthls	3	0	0	0.13	0.02	3.542149E+03	1.004041E+00	1.004041E+00	
gulf	3	0	0.04	0.08	0.05	0.000000E+00	0.000000E+00	0.000000E+00	
hadamals	90	0	0.07	1.1	18.62	8.133468E+02	2.630884E+01	2.531642E+01	t
hadamard	65	256	0.02		0.12	1.000000E+00	(IL)	1.000000E+00	
hager1	10000	5000		1.25	2.3	(Time)	8.807978E–01	8.807971E–01	
hager2	10000	5000		1.81	3.78	(Time)	4.320823E–01	4.320823E–01	

hager3-hatfldh

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hager3	10000	5000		2.28	4.19	(Time)	1.409613E–01	1.409613E–01	t
hager4	10000	5000			7.07	(Time)	ERROR	2.794031E+00	
haifam	85	150	0.77	1.46	0.48	-4.500030E+01	-4.500035E+01	-4.500069E+01	t
haifas	7	9	0.01	0.08	0	-4.500000E–01	-4.499962E–01	-4.500000E–01	
hairy	2	0	0	0.03	0.01	2.000000E+01	2.000000E+01	2.000000E+01	
haldmads	6	42	0.03	0.14	0.04	1.222178E–04	1.241968E–04	1.223712E–04	
hanging	288	180	8.33	1.34	0.3	-6.201760E+02	-6.201749E+02	-6.201760E+02	
harkerp2	100	0	0.14	0.49	0.62	-5.000000E–01	-4.993357E–01	-5.000000E–01	
hart6	6	0	0	0.05	0.02	-3.322887E+00	-3.322887E+00	-3.322887E+00	
hatflda	4	0	0	0.06	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldb	4	0	0	0.03	0	5.572809E–03	5.573065E–03	5.572811E–03	
hatfldc	4	0	0.01	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldd	3	0	0.01	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldе	3	0	0	0.03	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldf	3	0	0.01	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldg	25	0	0.03	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hatfldh	4	7	0.01	0.05	0	-2.450000E+01	-2.450000E+01	-2.450000E+01	

heart6-himmelbj

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
heart6	6	0				(IL)	(IL)	(IL)	
heart6ls	6	0				(IL)	(IL)	(IL)	
heart8	8	0			0.04	(IL)	(IL)	0.000000E+00	
heart8ls	8	0			0.03	(IL)	(IL)	0.000000E+00	
helix	3	0	0.01	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
hilberta	10	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
hilbertb	50	0	0.03	0.05	0.1	0.000000E+00	0.000000E+00	0.000000E+00	
himmelba	2	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
himmelbb	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
himmelbc	2	0	0	0.01	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
himmelbd	2	0	0.01		0.01	5.922563E+00	ERROR	5.922563E+00	
himmelbe	3	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
himmelbf	4	0	0.01	0.02	0.01	3.185717E+02	3.185717E+02	3.185717E+02	
himmelbg	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
himmelbh	2	0	0	0.01	0.01	-1.000000E+00	-1.000000E+00	-1.000000E+00	
himmelbi	100	12	0.06	0.19	0.06	-1.755000E+03	-1.755000E+03	-1.755000E+03	
himmelbj	43	14			0.2	ERROR	ERROR	-1.910345E+03	

himmelbk-hs008

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
himmelbk	24	14	0.02	0.12	0.06	5.181434E–02	5.183981E–02	5.181434E–02	
himmelp1	2	0	0.01	0.04	0.01	-2.389741E+01	-6.205387E+01	-6.205387E+01	
himmelp2	2	1	0.01	0.04	0.01	-8.198032E+00	-6.205387E+01	-6.205387E+01	
himmelp3	2	2	0.01	0.03	0	-5.901312E+01	-5.901312E+01	-5.901312E+01	
himmelp4	2	3	0	0.03	0	-5.901312E+01	-5.901312E+01	-5.901312E+01	
himmelp5	2	3	0.01	0.06	0.07	-5.901312E+01	-5.901312E+01	-5.901312E+01	t
himmelp6	2	4	0	0.04	0.01	-5.901312E+01	-5.901312E+01	-5.901312E+01	
hong	4	1	0	0.03	0	1.347307E+00	1.347332E+00	1.347307E+00	
hs001	2	0	0.01	0.05	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs002	2	0	0	0.04	0.01	5.042619E–02	4.941231E+00	4.941229E+00	
hs003	2	0	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs004	2	0	0	0.03	0.02	2.666667E+00	2.666669E+00	2.666667E+00	
hs005	2	0	0.01	0.03	0	-1.913223E+00	-1.913223E+00	-1.913223E+00	
hs006	2	1	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
hs007	2	1	0	0.02	0	-1.732051E+00	-1.732051E+00	-1.732051E+00	
hs008	2	2	0	0.01	0	-1.000000E+00	-1.000000E+00	-1.000000E+00	

hs009-hs025

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs009	2	1	0	0.02	0	-5.000000E–01	-5.000000E–01	-5.000000E–01	
hs010	2	1	0.01	0.03	0.01	-1.000000E+00	-9.999987E–01	-1.000000E+00	
hs011	2	1	0	0.03	0	-8.498464E+00	-8.498463E+00	-8.498464E+00	
hs012	2	1	0.01	0.03	0	-3.000000E+01	-3.000000E+01	-3.000000E+01	
hs013	2	1	0	0.04		1.680384E+00	1.006026E+00	(IL)	
hs014	2	2	0	0.03	0	1.393465E+00	1.393466E+00	1.393465E+00	
hs015	2	2	0	0.03	0.01	3.065000E+02	3.603799E+02	3.603798E+02	
hs016	2	2	0.01	0.03	0	2.314466E+01	2.314472E+01	2.500000E–01	
hs017	2	2	0.01	0.04	0.02	1.000000E+00	1.000002E+00	1.000000E+00	
hs018	2	2	0	0.05	0	5.000000E+00	5.000000E+00	5.000000E+00	
hs019	2	2	0	0.04	0	-6.961814E+03	-6.961812E+03	-6.961814E+03	
hs020	2	3	0.01	0.03	0.01	4.019873E+01	4.019879E+01	4.019873E+01	
hs021	2	1	0	0.04	0	-9.996000E+01	-9.996000E+01	-9.996000E+01	
hs022	2	2	0	0.03	0	1.000000E+00	1.000003E+00	1.000000E+00	
hs023	2	5	0	0.03	0.01	2.000000E+00	2.000003E+00	2.000000E+00	
hs024	2	2	0	0.03	0.01	-1.000000E+00	-9.999974E–01	-1.000000E+00	
hs025	3	0	0.01	0.12	0.06	3.283500E+01	0.000000E+00	0.000000E+00	

hs026-hs042

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs026	3	1	0.01	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs027	3	1	0	0.03	0.02	4.000000E–02	4.000000E–02	4.000000E–02	
hs028	3	1	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs029	3	1	0	0.03	0	-2.262742E+01	-2.262742E+01	-2.262742E+01	
hs030	3	1	0.01	0.22	0	1.000000E+00	9.999991E–01	1.000000E+00	
hs031	3	1	0	0.04	0	6.000000E+00	6.000001E+00	6.000000E+00	
hs032	3	2	0	0.04	0	1.000000E+00	1.000002E+00	1.000000E+00	
hs033	3	2	0	0.04	0.02	-3.993590E+00	-4.585783E+00	-4.585786E+00	
hs034	3	2	0	0.05	0	-8.340324E–01	-8.340317E–01	-8.340324E–01	
hs035	3	1	0	0.03	0.01	1.111111E–01	1.111114E–01	1.111111E–01	
hs036	3	1	0	0.03	0.01	-3.300000E+03	-3.300000E+03	-3.300000E+03	
hs037	3	1	0	0.03	0	-3.456000E+03	-3.456000E+03	-3.456000E+03	
hs038	4	0	0.01	0.08	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs039	4	2	0.01	0.02	0.01	-1.000000E+00	-1.000000E+00	-1.000000E+00	
hs040	4	3	0	0.02	0	-2.500000E–01	-2.500000E–01	-2.500000E–01	
hs041	4	1	0	0.04	0.01	1.925926E+00	1.925926E+00	1.925926E+00	
hs042	3	1	0	0.03	0	1.385786E+01	1.385786E+01	1.385786E+01	

hs043-hs060

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs043	4	3	0.01	0.03	0.01	-4.400000E+01	-4.400000E+01	-4.400001E+01	
hs044	4	6	0	0.04	0	-1.500000E+01	-1.499999E+01	-1.500000E+01	
hs045	5	0	0	0.04	0	2.000000E+00	1.000006E+00	1.000000E+00	
hs046	5	2	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs047	5	3	0.01	0.03	0	-2.671418E–02	0.000000E+00	0.000000E+00	
hs048	5	2	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
hs049	5	2	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
hs050	5	3	0	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs051	5	3	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs052	5	3	0	0.01	0.01	5.326648E+00	5.326648E+00	5.326647E+00	
hs053	5	3	0.01	0.02	0.01	4.093023E+00	4.093023E+00	4.093023E+00	
hs054	6	1	0.01	0.03	0	1.928571E–01	1.928571E–01	1.928571E–01	
hs055	6	6	0		0	6.666667E+00	ERROR	6.333333E+00	
hs056	7	4	0.01	0.04	0.01	-3.456000E+00	-3.456000E+00	-3.456000E+00	
hs057	2	1	0	0.04	0.02	3.064631E–02	3.064762E–02	2.845967E–02	
hs059	2	3	0	0.04	0.02	-6.749505E+00	-6.749505E+00	-7.802789E+00	
hs060	3	1	0	0.03	0	3.256820E–02	3.256820E–02	3.256820E–02	

hs061-hs080

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs061	3	2	0.01	0.02	0	-1.436461E+02	-1.436461E+02	-1.436461E+02	
hs062	3	1	0	0.02	0.01	-2.627251E+04	-2.627251E+04	-2.627251E+04	
hs063	3	2	0	0.03	0.01	9.617152E+02	9.617152E+02	9.617152E+02	
hs064	3	1	0.01	0.03	0.01	6.299842E+03	6.299843E+03	6.299842E+03	
hs065	3	1	0.01	0.04	0.01	9.535289E–01	9.535291E–01	9.535289E–01	
hs066	3	2	0	0.04	0	5.181633E–01	5.181658E–01	5.181633E–01	
hs070	4	1	0.02	0.08	0.05	9.401973E–03	9.401973E–03	1.751745E–01	
hs071	4	2	0	0.03	0	1.701402E+01	1.701402E+01	1.701402E+01	
hs072	4	2	0.01	0.06	0	7.272995E+02	7.276789E+02	7.276793E+02	
hs073	4	3	0	0.03	0	2.989438E+01	2.989440E+01	2.989438E+01	
hs074	4	4	0	0.04	0	5.126498E+03	5.126498E+03	5.126498E+03	
hs075	4	4	0	0.14	0	5.174402E+03	5.174413E+03	5.174413E+03	
hs076	4	3	0	0.03	0.01	-4.681818E+00	-4.681816E+00	-4.681818E+00	
hs077	5	2	0.01	0.02	0	2.415051E–01	2.415050E–01	2.415051E–01	
hs078	5	3	0	0.02	0	-2.919700E+00	-2.919700E+00	-2.919700E+00	
hs079	5	3	0.01	0.02	0	7.877682E–02	7.877692E–02	7.877683E–02	
hs080	5	3	0	0.03	0	5.394985E–02	5.394985E–02	5.394985E–02	

hs081-hs099

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs081	5	3	0	0.03	0.01	5.394985E–02	5.394985E–02	5.394985E–02	
hs083	5	3	0	0.03	0	-3.066554E+04	-3.066554E+04	-3.066554E+04	
hs084	5	3	0	0.02	0.01	-5.280335E+06	-5.280335E+06	-5.280335E+06	
hs085	5	38	0.01	0.15	0.13	-1.905155E+00	-1.905154E+00	-1.905155E+00	
hs086	5	6	0.01	0.04	0.01	-3.234868E+01	-3.234865E+01	-3.234868E+01	
hs087	11	6	0.01	0.3	0.01	8.827598E+03	8.827598E+03	8.827598E+03	
hs088	2	1	0.04		0.11	1.362657E+00	(IL)	1.362657E+00	
hs089	3	1	0.11		0.1	1.362657E+00	(IL)	1.362657E+00	
hs090	4	1	0.08		0.15	1.362657E+00	(IL)	1.362657E+00	
hs091	5	1	0.09		0.3	1.362657E+00	(IL)	1.362657E+00	
hs092	6	1	0.11		0.26	1.362657E+00	(IL)	1.362657E+00	
hs093	6	2	0.01	0.03	0.01	1.350760E+02	1.350760E+02	1.350760E+02	
hs095	6	4	0	0.05	0.01	1.561953E–02	1.565788E–02	1.561953E–02	
hs096	6	4	0	0.05	0.01	1.561953E–02	1.565788E–02	1.561953E–02	
hs097	6	4	0	0.04	0.01	3.135809E+00	3.135848E+00	3.135809E+00	
hs098	6	4	0.01	0.05	0.01	3.135809E+00	3.135848E+00	3.135809E+00	
hs099	19	14	0.01	0.03	0.02	-8.310799E+08	-8.310799E+08	-8.310799E+08	

hs100-hs113

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs100	7	4	0	0.03	0	6.806301E+02	6.806301E+02	6.806301E+02	
hs100lnp	7	2	0.01	0.02	0	6.806301E+02	6.806301E+02	6.806301E+02	
hs100mod	7	4	0	0.04	0.01	6.787547E+02	6.787547E+02	6.787547E+02	
hs101	7	6	0.14	0.43	0.3	1.809765E+03	1.809766E+03	1.809765E+03	
hs102	7	6	0.25	0.43	0.21	9.118806E+02	9.118830E+02	9.118806E+02	
hs103	7	6	0.11	0.48	0.07	5.436680E+02	5.436686E+02	5.436680E+02	
hs104	8	6	0.01	0.07	0.02	3.951163E+00	3.951169E+00	3.951163E+00	
hs105	8	0	0.22	1.14	0.53	1.136307E+03	1.136361E+03	1.136361E+03	
hs106	8	6	0	0.14	0.05	7.049243E+03	7.049253E+03	7.049248E+03	
hs107	9	6	0.01		0.01	5.055012E+03	(IL)	5.055012E+03	t
hs108	9	13	0.01	0.07	0.02	-8.660255E–01	-6.749799E–01	-8.660254E–01	
hs109	9	10	0.02	0.28	0.07	5.326851E+03	5.326851E+03	5.326851E+03	
hs110	10	0	0	0.04	0	-4.577847E+01	-4.577847E+01	-4.577847E+01	
hs111	10	3	0.03	0.05	0.01	-4.775968E+01	-4.776109E+01	-4.776109E+01	
hs111lnp	10	3	0.07	0.03	0.04	-4.770832E+01	-4.776109E+01	-4.776109E+01	
hs112	10	3	0	0.03	0.01	-4.776109E+01	-4.776109E+01	-4.776109E+01	
hs113	10	8	0.01	0.04	0.02	2.430621E+01	2.430622E+01	2.430621E+01	

41 hs114-hypcir

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
hs114	10	11	0.01	0.08	0.01	-1.768807E+03	-1.768806E+03	-1.768807E+03	
hs116	13	15	0.06	0.09	0.05	9.758749E+01	9.758960E+01	9.758751E+01	
hs117	15	5	0.01	0.09	0	3.234868E+01	3.234875E+01	3.234868E+01	
hs118	15	17	0	0.06	0.01	6.648205E+02	6.648205E+02	6.648205E+02	
hs119	16	8	0.01	0.11	0.04	2.448997E+02	2.448999E+02	2.448997E+02	
hs21mod	7	1	0	0.05	0	-9.596000E+01	-9.596000E+01	-9.596000E+01	
hs268	5	5	0.01	0.06	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
hs35mod	2	1	0	0.03	0	2.500000E–01	2.500003E–01	2.500000E–01	
hs3mod	2	0	0.01	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
hs44new	4	5	0	0.03	0.02	-1.500000E+01	-1.499999E+01	-1.500000E+01	
hs99exp	28	21	0.06	0.05	0.07	-1.008063E+09	-1.008062E+09	-1.008063E+09	t
hubfit	2	1	0	0.04	0	1.689349E–02	1.689375E–02	1.689350E–02	
hues-mod	10000	2			8.37	(Unb)	ERROR	3.482449E+07	
huestis	10000	2			6.74	(Time)	ERROR	3.482449E+11	t
humps	2	0	0.02	0.13	0.08	0.000000E+00	0.000000E+00	0.000000E+00	
hvycrash	201	150	0.4	1.33	0.38	-2.185000E–01	-1.681462E–04	-2.185000E–01	
hypcir	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	

indef-liswet12

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
indef	1000	0				(Unb)	(IL)	(IL)	
integreq	100	0	0.26	5	10.75	0.000000E+00	0.000000E+00	0.000000E+00	
jensmp	2	0	0.01	0.01	0	1.243622E+02	1.243622E+02	1.243622E+02	
kissing	127	903		17.2	3.25	(Inf)	8.446393E–01	1.000001E+00	t
kiwcresc	3	2	0	0.04	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
kowosb	4	0	0.01	0.02	0	3.075056E–04	3.075056E–04	3.075056E–04	
ksip	20	1000	7.47	26.25	1.85	5.757979E–01	5.758009E–01	5.757979E–01	
lakes	90	78	0.1		0.89	3.505248E+05	ERROR	3.505248E+05	t
launch	25	29				(Inf)	ERROR	(IL)	
lch	600	1	24.29		45.63	4.432234E–05	(IL)	-4.318289E+00	
lewispol	6	9				(Inf)	ERROR	(IL)	
liarwhd	10000	0		2.53	7.79	(Time)	0.000000E+00	0.000000E+00	
linspanh	72	32	0.01	0.11	0.02	-7.700000E+01	-7.700000E+01	-7.700000E+01	
liswet1	10002	10000			5.49	ERROR	ERROR	2.500304E+01	t
liswet10	10002	10000			7.54	ERROR	ERROR	2.499984E+01	t
liswet11	10002	10000	4.68		3.21	4.951599E+01	ERROR	2.499977E+01	t
liswet12	10002	10000			3.69	ERROR	ERROR	2.499988E+01	t

liswet2-madsen

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
liswet2	10002	10000	3.92		3.21	2.500188E+01	ERROR	2.499963E+01	t
liswet3	10002	10000	3.75		12.18	2.502364E+01	ERROR	2.499981E+01	
liswet4	10002	10000	3.9		13.98	2.501440E+01	ERROR	2.499981E+01	
liswet5	10002	10000	4.56		10.29	2.501861E+01	ERROR	2.499982E+01	
liswet6	10002	10000	4		5.72	2.500901E+01	ERROR	2.499986E+01	
liswet7	10002	10000			2.92	ERROR	ERROR	2.499968E+01	t
liswet8	10002	10000			2.78	ERROR	ERROR	2.499966E+01	t
liswet9	10002	10000			2.89	ERROR	ERROR	2.499964E+01	t
lminsurf	15129	0			411.74	(Time)	ERROR	9.000000E+00	
loadbal	31	31	0.04	0.1	0.02	4.528510E–01	4.528537E–01	4.528510E–01	
loghairy	2	0	0	0.05	0	6.543338E+00	6.337444E+00	1.823216E–01	
logros	2	0	0.01	0.07	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
lootsma	3	2	0	0.04	0	2.006410E+00	1.414217E+00	1.414214E+00	
lotschd	12	7	0	0.04	0	2.398416E+03	2.398416E+03	2.398416E+03	
lsnnodoc	5	4	0	0.04	0	1.231124E+02	1.231125E+02	1.231124E+02	
lsqfit	2	1	0	0.04	0.01	3.378699E–02	3.378724E–02	3.378701E–02	
madsen	3	6	0	0.04	0.02	6.164324E–01	6.164350E–01	6.164324E–01	

madsschj-mifflin2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
madsschj	81	158	1.84	6.8	1.1	-7.972847E+02	-7.972837E+02	-7.972837E+02	
makela1	3	2	0	0.04	0.01	-1.414216E+00	-1.414211E+00	-1.414214E+00	
makela2	3	3	0	0.03	0	7.200000E+00	7.200003E+00	7.200000E+00	
makela3	21	20	0.03	0.05	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
makela4	21	40	0	0.06	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
mancino	100	0		2.52	3.82	ERROR	0.000000E+00	0.000000E+00	
manne	1094	730	0.58			-9.745726E–01	(Time)	(IL)	
maratos	2	1	0	0.02	0	-1.000000E+00	-1.000000E+00	-1.000000E+00	
maratosb	2	0	0.01	0.01	0.01	-1.000000E+00	-1.000000E+00	-1.000000E+00	
matrix2	6	2	0	0.05	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
mccormck	50000	0			16.38	(Time)	ERROR	-4.566161E+04	
mconcon	15	11	0	0.38	0.09	-6.230796E+03	-6.230796E+03	-6.230796E+03	
mdhole	2	0	0.01	0.04	0	0.000000E+00	0.000000E+00	0.000000E+00	t
mexhat	2	0	0.01	0.01	0	-4.010000E–02	-4.010000E–02	-4.010000E–02	
meyer3	3	0			0.03	ERROR	ERROR	8.794586E+01	
mifflin1	3	2	0.01	0.03	0.01	-1.000000E+00	-9.999974E–01	-1.000000E+00	
mifflin2	3	2	0.01	0.04	0.01	-1.000000E+00	-9.999974E–01	-1.000000E+00	

minc44-ncvxqp1

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
minc44	303	262	2.44	3.84		2.573029E–03	2.574637E–03	ERROR	
minmaxbd	5	20	0.05	0.17	0.02	1.157064E+02	1.157064E+02	1.157064E+02	
minmaxrb	3	4	0	0.05	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
minsurf	36	0	0.02	0.02	0.02	1.000000E+00	1.000000E+00	1.000000E+00	
model	60	32	0	0.25	0.02	5.742163E+03	5.742171E+03	5.742163E+03	
morebv	5000	0	0.09	31.09	1.11	0.000000E+00	0.000000E+00	0.000000E+00	
mosarqp1	2500	700	145.58	33.9	1.02	-9.528754E+02	-9.528659E+02	-9.528754E+02	
mosarqp2	900	600	39.8	18.36	0.84	-1.597482E+03	-1.597480E+03	-1.597482E+03	
msqrta	1024	0		590.6	799.38	(IL)	0.000000E+00	0.000000E+00	
msqrtals	1024	0		601.05	798.73	(IL)	0.000000E+00	0.000000E+00	
msqrtb	1024	0		388.85	721.36	(IL)	0.000000E+00	0.000000E+00	
msqrtbls	1024	0		390.23	721.9	(IL)	0.000000E+00	0.000000E+00	
mwright	5	3	0	0.02	0.01	2.497881E+01	2.497881E+01	2.497881E+01	
ncvxbqp1	10000	0	29.57		1290.69	-1.985544E+10	ERROR	-1.985544E+10	t
ncvxbqp2	10000	0			2176.94	(Time)	ERROR	-1.331105E+10	t
ncvxbqp3	10000	0	72.23		960.85	-6.457782E+09	ERROR	-6.520234E+09	t
ncvxqp1	1000	500	0.59	10.03	344.9	-7.144473E+07	-7.158554E+07	-7.159169E+07	

ncvxqp2-oet3

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
ncvxqp2	1000	500	0.93		177.27	-5.779381E+07	(IL)	-5.781269E+07	
ncvxqp3	1000	500	1.75	26.14	54.46	-3.142590E+07	-3.080770E+07	-3.138459E+07	t
ncvxqp4	1000	500	0.46		184.77	-9.394491E+07	ERROR	-9.397879E+07	
ncvxqp5	1000	500	0.52		95.43	-6.636307E+07	ERROR	-6.629277E+07	
ncvxqp6	1000	500	1.25	5.58	54.55	-3.547657E+07	-3.462029E+07	-3.482671E+07	t
ncvxqp7	1000	500	0.74		438.03	-4.352289E+07	(IL)	-4.352430E+07	
ncvxqp8	1000	500	0.93		171.2	-3.048856E+07	ERROR	-3.045733E+07	
ncvxqp9	1000	500	1.75		101.1	-2.157840E+07	ERROR	-2.157475E+07	
ngone	97	1273	9.41	10.84	1.97	-6.419796E–01	-6.408969E–01	-6.332839E–01	
nondia	9999	0		0.87	4.12	(Time)	0.000000E+00	0.000000E+00	
nondquar	10000	0		35.47	6.24	(Time)	0.000000E+00	0.000000E+00	
nonmsqrt	9	0		0.06	0.12	ERROR	7.520437E–01	7.518010E–01	
nonscomp	10000	0			7.88	(Time)	ERROR	0.000000E+00	
odfits	10	6	0	0.03	0	-2.380027E+03	-2.380027E+03	-2.380027E+03	
oet1	3	1002	0.29	15.37	0.23	5.382431E–01	5.382448E–01	5.382431E–01	
oet2	3	1002	0.8	39.64	2.49	8.716644E–02	8.716027E–02	8.715963E–02	t
oet3	4	1002	0.24	24.94	0.24	4.504408E–03	4.512137E–03	4.505056E–03	

oet7-orthrgdm

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
oet7	7	1002	24.29	88.93	12.4	4.432234E–05	2.089089E–03	4.445575E–05	t
optcdeg2	1198	799	3.85	2.14	5.4	2.295735E+02	2.295891E+02	2.295734E+02	
optcdeg3	1198	799	3.65	3.19	4.18	4.614568E+01	4.614775E+01	4.614567E+01	
optcntrl	28	20	0	0.13	0.04	5.499988E+02	5.499991E+02	5.500000E+02	
optctrl3	118	80	6.52	0.15	0.32	2.048017E+03	2.048017E+03	2.048017E+03	
optctrl6	118	80	6.54	0.15	0.3	2.048017E+03	2.048017E+03	2.048017E+03	
optmass	66	55	0.04	0.08	0.06	-1.895426E–01	-1.895284E–01	-1.895425E–01	
optprloc	30	29	0.01	0.23	0.12	-1.641977E+01	-1.641974E+01	-1.641977E+01	t
orthrdm2	4003	2000	2233.94	35.84	15.56	1.555328E+02	1.555328E+02	1.555328E+02	t
orthrds2	203	100	8.42		0.9	3.053965E+01	ERROR	1.304822E+02	
orthrega	517	256	145.77	0.21	2.95	1.414056E+03	1.664801E+03	1.414056E+03	
orthregb	27	6	0.02	0.02	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
orthregc	10005	5000			171.62	(Time)	ERROR	1.895946E+02	
orthregd	10003	5000			67.98	(Time)	ERROR	1.523900E+03	t
orthrege	36	20		0.75	0.06	(IL)	3.662142E+00	5.898964E+00	t
orthrgdm	10003	5000			65.9	(Time)	ERROR	1.513802E+03	t

orthrgds-palmer3a

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
orthrgds	10003	5000			235.87	(Time)	ERROR	1.613049E+03	t
osbornea	5	0	0.03	0.07	0.03	5.464895E–05	5.465699E–05	5.464895E–05	
osborneb	11	0	0.06	0.07	0.11	4.013774E–02	4.013774E–02	8.759472E–02	
oslbqp	8	0	0	0.04	0.01	6.250000E+00	6.250006E+00	6.250000E+00	
palmer1	4	0	0		0.02	1.175460E+04	ERROR	1.175460E+04	
palmer1a	6	0	0.05	0.13	0.04	8.988363E–02	8.988363E–02	8.988363E–02	
palmer1b	4	0	0.02	0.06	0.03	3.447355E+00	3.447355E+00	3.447355E+00	
palmer1c	8	0	0.05		0.03	9.759799E–02	ERROR	9.759799E–02	
palmer1d	7	0	0.03		0.09	6.526826E–01	(IL)	6.526826E–01	
palmer1e	8	0	0.08		0.08	8.352683E–04	(IL)	8.352683E–04	
palmer2	4	0	0.01		0.01	3.651090E+03	ERROR	3.651090E+03	
palmer2a	6	0	0.02		0.07	1.716074E–02	(IL)	1.716074E–02	
palmer2b	4	0	0	0.06	0.02	6.233947E–01	6.233947E–01	6.233947E–01	
palmer2c	8	0	0.04		0.04	1.442139E–02	(IL)	1.442139E–02	
palmer2e	8	0	0.07		0.09	2.153525E–04	(IL)	2.153525E–04	
palmer3	4	0	0		0.01	2.416980E+03	ERROR	2.265958E+03	
palmer3a	6	0	0.03		0.04	2.043142E–02	(IL)	2.043142E–02	

palmer3b-palmer7a

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
palmer3b	4	0	0	0.06	0.01	4.227647E+00	4.227647E+00	4.227647E+00	
palmer3c	8	0	0.04		0.03	1.953764E–02	(IL)	1.953764E–02	
palmer3e	8	0	0.07		0.08	5.074084E–05	(IL)	5.074084E–05	
palmer4	4	0	0		0.02	2.424016E+03	ERROR	2.285383E+03	
palmer4a	6	0	0.02		0.04	4.060614E–02	(IL)	4.060614E–02	
palmer4b	4	0	0	0.05	0	6.835139E+00	6.835139E+00	6.835139E+00	
palmer4c	8	0	0.03		0.02	5.031070E–02	(IL)	5.031070E–02	
palmer4e	8	0	0.04		0.06	1.480042E–04	(IL)	1.480042E–04	
palmer5a	8	0				(IL)	(IL)	(IL)	
palmer5b	9	0	0.1		0.15	1.531153E–02	(IL)	9.752493E–03	t
palmer5c	6	0	0.01	0.03	0.01	2.128087E+00	2.128087E+00	2.128087E+00	
palmer5d	4	0	0.01	0.03	0.02	8.733940E+01	8.733940E+01	8.733940E+01	
palmer5e	8	0			0.03	(IL)	(IL)	1.630506E+00	
palmer6a	6	0	0.03		0.07	5.594884E–02	ERROR	5.594884E–02	
palmer6c	8	0	0.03	0.08	0.11	1.638742E–02	1.638742E–02	1.638742E–02	
palmer6e	8	0	0.04	0.2	0.08	2.239550E–04	2.239550E–04	2.239550E–04	
palmer7a	6	0				(IL)	(IL)	(IL)	

palmer7c-pfit4ls

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
palmer7c	8	0	0.03		0.02	6.019857E–01	(IL)	6.019857E–01	
palmer7e	8	0			0.09	(IL)	(IL)	1.015390E+01	t
palmer8a	6	0	0.02		0.02	7.400970E–02	(IL)	7.400970E–02	
palmer8c	8	0	0.03	0.67	0.03	1.597681E–01	1.597681E–01	1.597681E–01	
palmer8e	8	0	0.03		0.06	6.339307E–03	(IL)	6.339307E–03	
penalty1	1000	0		15.14	325.38	(Unb)	9.686191E–03	9.686175E–03	
penalty2	100	0	0.29	0.15	0.2	9.709608E+04	9.709608E+04	9.709608E+04	
pentagon	6	12	0.01	0.06	0.01	1.365224E–04	1.378273E–04	1.365217E–04	
pentdi	1000	0	0.02	0.82	0.46	-7.500000E–01	-7.450021E–01	-7.500000E–01	
pfit1	3	0	0.09	0.31	0.04	0.000000E+00	0.000000E+00	0.000000E+00	
pfit1ls	3	0	0.09	0.31	0.04	0.000000E+00	0.000000E+00	0.000000E+00	
pfit2	3	0	0.09		0.02	0.000000E+00	ERROR	0.000000E+00	
pfit2ls	3	0	0.09		0.02	0.000000E+00	ERROR	0.000000E+00	
pfit3	3	0		0.16	0.01	(IL)	0.000000E+00	0.000000E+00	
pfit3ls	3	0		0.16	0.01	(IL)	0.000000E+00	0.000000E+00	
pfit4	3	0	0.1		0.09	0.000000E+00	ERROR	0.000000E+00	
pfit4ls	3	0	0.1		0.09	0.000000E+00	ERROR	0.000000E+00	

51 polak1-power

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
polak1	3	2	0	0.03	0.01	2.718281E+00	2.718284E+00	2.718282E+00	
polak2	11	2	0.04	0.09	0.02	5.459815E+01	5.459815E+01	5.459815E+01	
polak3	12	10	0.07	0.16	0.04	5.933003E+00	5.933004E+00	5.933003E+00	
polak4	3	3	0	0.7	0	0.000000E+00	0.000000E+00	0.000000E+00	
polak5	3	2	0.01	0.03	0.03	5.000000E+01	5.000000E+01	5.000000E+01	
polak6	5	4	0.01	0.05	0.02	-4.400000E+01	-4.400000E+01	-4.400000E+01	
porous1	4900	0		720.21	77.97	(IL)	0.000000E+00	0.000000E+00	
porous2	4900	0		168.01	82.02	(IL)	0.000000E+00	0.000000E+00	
portfl1	12	1	0.02	0.05	0.01	2.048627E–02	2.048788E–02	2.048628E–02	
portfl2	12	1	0.01	0.04	0.04	2.968924E–02	2.969125E–02	2.968924E–02	
portfl3	12	1	0.01	0.05	0.03	3.274971E–02	3.275127E–02	3.274971E–02	
portfl4	12	1	0.02	0.04	0.01	2.630695E–02	2.630854E–02	2.630696E–02	
portfl6	12	1	0.02	0.04	0.02	2.579180E–02	2.579342E–02	2.579180E–02	
powell20	1000	1000	0.7	2.11	0.48	5.214578E+07	5.214564E+07	5.214578E+07	
powellbs	2	0	0.01	0.03	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
powellsq	2	0	0	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
power	1000	0	820.4	1.93	0.17	0.000000E+00	0.000000E+00	0.000000E+00	

probpenl-reading2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
probpenl	500	0	4.78	0.63	23.94	3.991984E–07	3.991984E–07	-1.390900E–05	t
prodpl0	60	29	0.01	0.1	0.07	6.091924E+01	6.091949E+01	6.091924E+01	
prodpl1	60	29	0.02	0.09	0.09	5.303701E+01	5.303727E+01	5.303702E+01	
pspdoc	4	0	0	0.03	0	2.414214E+00	2.414215E+00	2.414214E+00	
pt	2	501	0.02		0.09	1.783942E–01	ERROR	1.783942E–01	
qpcboei1	372	288	1.12		0.97	1.443387E+07	ERROR	1.443387E+07	
qpcboei2	143	125	0.14	0.04	0.47	8.293666E+06	(IL)	8.293666E+06	
qpcstair	385	356	1.21	34.7	6.13	6.204392E+06	6.204395E+06	6.204391E+06	t
qpnboei1	372	288	17.05	43.61		8.449925E+06	8.514858E+06	(IL)	
qpnboei2	143	125	0.24	4.89	2.06	1.271826E+06	1.271824E+06	1.271826E+06	t
qpnstair	385	356	1.2	24.61	19.42	5.146033E+06	5.146033E+06	5.146033E+06	t
qr3dls	155	0		5.01	3.9	(IL)	0.000000E+00	0.000000E+00	
qrtquad	120	0	0.36	0.13	0.14	-3.648088E+06	-3.648088E+06	-3.648088E+06	t
quartc	10000	0		4.44	11.44	(Unb)	3.689021E–05	0.000000E+00	
qudlin	12	0	0	0.06	0.01	-7.200000E+03	-7.200000E+03	-7.200000E+03	
reading1	10001	5000			1335.43	(Time)	ERROR	-1.604803E–01	t
reading2	15001	10000	403.2		10.43	-1.050994E–02	ERROR	-1.258248E–02	

reading3-s210

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
reading3	202	102	0.02	1.07	0.68	0.000000E+00	0.000000E+00	0.000000E+00	
recipe	3	0	0.01	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
res	18	2	0	0.09	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
rk23	17	11	0.01	0.06	0.01	8.333333E–02	8.333973E–02	8.333333E–02	
robot	7	2	0.01	0.02	0.01	5.462841E+00	6.593299E+00	6.593299E+00	
rosenbr	2	0	0.01	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
rosenmmx	5	4	0.01	0.05	0.01	-4.400000E+01	-4.400000E+01	-4.400001E+01	
s201	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s202	2	0	0	0.01	0	4.898425E+01	4.898425E+01	4.898425E+01	
s203	5	3	0.01	0.02	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
s204	2	0	0	0.01	0	1.836012E–01	1.836012E–01	1.836012E–01	
s205	2	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s206	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s207	2	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s208	2	0	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
s209	2	0	0.01	0.07	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s210	2	0	0.03	0.38		0.000000E+00	0.000000E+00	(IL)	

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s211	2	0	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s212	2	0	0.01	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s213	2	0	0.01	0.02	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s214	2	0			0.04	ERROR	ERROR	0.000000E+00	
s215	2	1	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s216	2	1	0.01	0.02	0	4.896936E+01	9.993753E–01	9.993753E–01	
s217	2	2	0.01	0.03	0	-8.000000E–01	-7.999987E–01	-8.000000E–01	
s218	2	1	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s219	4	2	0	0.03	0.01	-1.000001E+00	-1.000002E+00	-1.000000E+00	
s220	2	1	0	0.05	0	1.000000E+00	1.011040E+00	1.000000E+00	
s221	2	1	0	0.03		-7.777778E–01	-9.937358E–01	(IL)	
s222	2	1	0	0.03	0	-1.500001E+00	-1.499997E+00	-1.500000E+00	
s223	2	2	0	0.04	0	-8.340324E–01	-8.340319E–01	-8.340325E–01	
s224	2	2	0	0.03	0	-3.040000E+02	-3.040000E+02	-3.040000E+02	
s225	2	5	0	0.03	0	2.000000E+00	2.000003E+00	2.000000E+00	
s226	2	2	0	0.03	0.01	-5.000000E–01	-4.999997E–01	-5.000000E–01	
s227	2	2	0	0.03	0	1.000000E+00	1.000003E+00	1.000000E+00	
s228	2	2	0	0.03	0.01	-3.000000E+00	-3.000000E+00	-3.000000E+00	

s229-s245

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s229	2	0	0.01	0.05	0	0.000000E+00	0.000000E+00	0.000000E+00	
s230	2	2	0	0.03	0.01	3.750000E–01	3.750026E–01	3.749999E–01	
s231	2	2	0	0.05	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s232	2	2	0	0.03	0.01	-1.000000E+00	-9.999974E–01	-1.000000E+00	
s233	2	1	0	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
s234	2	1	0	0.04	0	-8.000000E–01	-7.999984E–01	-8.000000E–01	
s235	3	1	0	0.03	0	4.000000E–02	4.000000E–02	4.000000E–02	
s236	2	2	0.01	0.04	0	-5.890344E+01	-5.890343E+01	-5.890343E+01	
s237	2	3	0.01	0.06	0.09	-5.890344E+01	-5.890343E+01	-5.890344E+01	t
s238	2	3	0.01	0.05	0.01	-5.890344E+01	-5.890343E+01	-5.890344E+01	
s239	2	1	0.01	0.04	0	-5.890344E+01	-5.890343E+01	-5.890344E+01	
s240	3	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s241	8	5	0	0.03	0	0.000000E+00	0.000000E+00	0.000000E+00	
s242	3	0	0	0.06	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s243	3	0	0	0.01	0	7.965552E–01	7.965552E–01	7.965552E–01	
s244	3	0	0	0.04	0	0.000000E+00	0.000000E+00	0.000000E+00	
s245	3	0	0	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	

s246-s262

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s246	3	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s247	4	1	0	0.05	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s248	3	2	0	0.03	0	-8.000001E–01	-7.999987E–01	-8.000000E–01	
s249	3	1	0.01	0.03	0.01	1.000000E+00	1.000003E+00	1.000000E+00	
s250	3	1	0	0.03	0	-3.300000E+03	-3.300000E+03	-3.300000E+03	
s251	3	1	0	0.03	0.01	-3.456000E+03	-3.456000E+03	-3.456000E+03	
s252	3	1	0	0.05	0	4.000000E–02	4.000026E–02	4.000000E–02	
s253	3	1	0	0.05	0	6.928203E+01	6.928203E+01	6.928203E+01	
s254	3	2	0	0.02	0.01	-1.732051E+00	-1.732051E+00	-1.732051E+00	
s255	4	0			0	(Unb)	(IL)	-9.610366E+01	
s256	4	0	0.01	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s257	4	0	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s258	4	0	0	0.04	0	0.000000E+00	0.000000E+00	0.000000E+00	
s259	4	0	0.01	0.03	0	-8.544621E+00	-8.544621E+00	-8.544621E+00	
s260	4	0	0.01	0.04	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s261	4	0	0.01	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
s262	4	4	0	0.03	0	-1.000000E+01	-9.999996E+00	-1.000000E+01	

s263-s279

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s263	4	4	0.01	0.05	0	-1.000000E+00	-9.999974E–01	-1.000000E+00	
s264	4	3	0	0.03	0	-4.411341E+01	-4.411340E+01	-4.411341E+01	
s265	4	2	0	0.02	0	9.747466E–01	1.903625E+00	1.903625E+00	
s266	5	0	0	0.02	0	1.000000E+00	1.000000E+00	1.000000E+00	
s267	5	0	0.01	0.02	0.03	0.000000E+00	1.496628E–02	0.000000E+00	
s268	5	5		0.05	0	ERROR	0.000000E+00	0.000000E+00	
s269	5	3	0.01	0.01	0	4.093023E+00	4.093023E+00	4.093023E+00	
s270	5	1	0	0.05	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s271	6	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s272	6	0	0.01	0.2	0.05	5.655650E–03	2.426960E–01	0.000000E+00	
s273	6	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s274	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s275	4	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s276	6	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s277	4	4	0	0.04	0	5.076190E+00	5.076196E+00	5.076190E+00	
s278	6	6	0.01	0.04	0	7.838528E+00	7.838536E+00	7.838528E+00	
s279	8	8	0	0.05	0.01	1.060595E+01	1.060596E+01	1.060595E+01	

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s280	10	10	0	0.06	0.01	1.337543E+01	1.337544E+01	1.337543E+01	
s281	10	0			0.09	ERROR	(IL)	0.000000E+00	
s282	10	0	0.02	0.02	0.02	0.000000E+00	3.984395E+00	0.000000E+00	
s283	10	0	0.06	0.03	0.04	0.000000E+00	0.000000E+00	0.000000E+00	
s284	15	10	0.07	0.1	0.03	-1.840000E+03	-1.840000E+03	-1.840000E+03	
s285	15	10	0.03	0.05	0.02	-8.251492E+03	-8.251492E+03	-8.251492E+03	
s286	20	0	0.01	0.03	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
s287	20	0	0.02	0.04	0.04	0.000000E+00	0.000000E+00	0.000000E+00	
s288	20	0	0.01	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s289	30	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s290	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s291	10	0	0.01	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s292	30	0	0.01	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s293	50	0	0.05	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s294	6	0	0.01	0.02	0.01	0.000000E+00	3.973941E+00	3.973941E+00	
s295	10	0	0.01	0.03	0.03	0.000000E+00	3.986579E+00	3.986579E+00	
s296	16	0	0.03	0.04	0.02	0.000000E+00	3.986624E+00	3.986624E+00	

s297-s316

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s297	30	0	0.02	0.08	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
s298	50	0	0.06	0.14	0.12	0.000000E+00	0.000000E+00	0.000000E+00	
s299	100	0	0.25	0.38	0.36	0.000000E+00	0.000000E+00	0.000000E+00	
s300	20	0	0.01	0.01	0.01	-2.000000E+01	-2.000000E+01	-2.000000E+01	
s301	50	0	0.04	0.02	0.04	-5.000000E+01	-5.000000E+01	-5.000000E+01	
s302	100	0		0.02	0.1	(IL)	-1.000000E+02	-1.000000E+02	
s303	20	0	0.01	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
s304	50	0	0.06	0.03	0.05	0.000000E+00	0.000000E+00	0.000000E+00	
s305	100	0	0.14	0.08	0.27	0.000000E+00	0.000000E+00	0.000000E+00	
s307	2	0	0		0.01	1.243622E+02	ERROR	1.243622E+02	
s308	2	0	0	0.01	0.01	7.731991E–01	7.731991E–01	7.731991E–01	
s309	2	0	0	0.01	0	-3.987171E+00	2.891492E–01	2.891492E–01	
s311	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s312	2	0	0		0	5.922563E+00	ERROR	5.922563E+00	
s314	2	0	0	0.01	0	1.690427E–01	1.690427E–01	1.690427E–01	
s315	2	3	0	0.03	0	-8.000000E–01	-7.999974E–01	-8.000000E–01	
s316	2	1	0	0.02	0	3.343146E+02	3.343146E+02	3.343146E+02	

s317-s332a

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s317	2	1	0	0.02	0	3.724659E+02	3.724666E+02	3.724666E+02	
s318	2	1	0	0.02	0.01	4.127499E+02	4.127501E+02	4.127501E+02	
s319	2	1	0.01	0.02	0.01	4.524044E+02	4.524044E+02	4.524044E+02	
s320	2	1	0	0.02	0	4.855315E+02	4.855315E+02	4.855315E+02	
s321	2	1	0	0.02	0.01	4.961124E+02	4.961124E+02	4.961124E+02	
s322	2	1	0.01		0.01	4.999600E+02	(IL)	4.999600E+02	
s323	2	2	0	0.04	0	3.798945E+00	3.798946E+00	3.798945E+00	
s324	2	2	0	0.03	0	5.000000E+00	5.000000E+00	5.000000E+00	
s325	2	3	0	0.03	0.01	3.791341E+00	3.791343E+00	3.791341E+00	
s326	2	2	0	0.03	0.01	-7.980782E+01	-7.980782E+01	-7.980782E+01	
s327	2	1	0.01	0.04	0	3.064631E–02	3.064762E–02	3.064762E–02	
s328	2	0	0	0.03	0.01	1.744152E+00	1.744152E+00	1.744152E+00	
s329	2	3	0.01	0.05	0.01	-6.961814E+03	-6.961812E+03	-6.961816E+03	
s330	2	1	0	0.03	0.01	1.620583E+00	1.620585E+00	1.620583E+00	
s331	2	1	0	0.03	0	4.258385E+00	4.258385E+00	4.258385E+00	
s332	2	1				ERROR	ERROR	(IL)	
s332a	2	100	0.04	0.38	0.1	2.992435E+01	2.992435E+01	2.992435E+01	

s333-s350

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s333	3	0	0.01	0.02		5.608266E+00	4.327035E–02	(IL)	
s334	3	0	0	0.01	0.01	8.214877E–03	8.214877E–03	8.214877E–03	
s335	3	2	0.01	0.04	0.01	-4.472137E–03	-4.472972E–03	-4.472138E–03	
s336	3	2	0.13	0.02	0.01	-3.378957E–01	-3.378957E–01	-3.378957E–01	
s337	3	1	0.01	0.04	0	6.000000E+00	6.000001E+00	6.000000E+00	
s338	3	2	0	0.02	0.02	-7.205699E+00	-7.205698E+00	-1.099281E+01	
s339	3	1	0	0.03	0	3.361680E+00	3.361680E+00	3.361680E+00	
s340	3	1				(Unb)	(IL)	(Unb)	
s341	3	1	0.01	0.03	0.01	-2.262742E+01	-2.262742E+01	-2.262742E+01	
s342	3	1	0.01	0.04	0.01	-2.262742E+01	-2.262742E+01	-2.262742E+01	
s343	3	2	0	0.05	0	-5.684782E+00	-5.684780E+00	-5.684783E+00	
s344	3	1	0	0.02	0	3.256820E–02	3.256820E–02	3.256820E–02	
s345	3	1	0	0.02	0.02	3.256820E–02	3.256820E–02	3.256820E–02	
s346	3	2	0.01	0.05	0.01	-5.684782E+00	-5.684780E+00	-5.684783E+00	
s347	6	4	0	0.04	0	1.737463E+04	1.737464E+04	1.737463E+04	
s348	3	1	0		0	3.697084E+01	(IL)	3.697084E+01	
s350	4	0	0	0.02	0.01	3.075056E–04	3.075056E–04	3.075056E–04	

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s351	4	0	0.01	0.02	0.01	3.185717E+02	3.185717E+02	3.185717E+02	
s352	4	0	0.01	0.01	0.01	9.032343E+02	9.032343E+02	9.032343E+02	
s353	4	3	0	0.03	0	-3.993367E+01	-3.993365E+01	-3.993367E+01	
s354	4	1	0	0.04	0.01	1.137838E–01	1.137841E–01	1.137839E–01	
s355	4	1	0.05	0.37	0.01	6.967546E+01	6.967548E+01	6.967546E+01	t
s356	4	5	0.01	0.04	0.02	1.884454E+00	1.884549E+00	1.884454E+00	
s357	4	35	0.03	0.33	0.23	3.584571E–01	3.584571E–01	3.584571E–01	
s358	5	0	0.02	0.06	0.01	5.464895E–05	5.464985E–05	5.464895E–05	
s359	5	14	0	0.03	0.02	-5.504451E+06	-5.504451E+06	-5.504451E+06	
s360	5	2	0	0.02	0.01	-5.280335E+06	-5.280335E+06	-5.280335E+06	
s361	5	6	0	0.03	0	-1.526016E+04	-1.526008E+04	-1.526016E+04	
s365	7	5	0.01	0.06	0.01	5.213990E+01	1.242388E+02	5.213990E+01	
s365mod	7	5	0.02	0.05	0.02	5.213990E+01	1.242388E+02	5.218908E+01	
s366	7	14	0.02	0.05	0.03	1.226973E+03	1.226996E+03	1.226973E+03	
s367	7	5	0.01	0.03	0.02	-3.397112E+01	-3.741296E+01	-3.741296E+01	
s368	8	0	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
s368	100	0	0.2	2.73	2.88	0.000000E+00	0.000000E+00	0.000000E+00	

s369-s385

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s369	8	6	0.01	0.33	0.01	7.049247E+03	7.049272E+03	7.049248E+03	
s370	6	0	0.02	0.02	0.01	2.287670E–03	2.287671E–03	2.287670E–03	
s371	9	0	0.05	0.02	0.03	0.000000E+00	0.000000E+00	0.000000E+00	
s372	9	12	0.01	0.08	0.03	1.339009E+04	1.339009E+04	1.339009E+04	
s373	9	6	0	0.03	0.02	1.339009E+04	1.339009E+04	1.339009E+04	
s374	10	35	0.09		0.4	2.332773E–01	(IL)	2.332773E–01	t
s375	10	9	0.01	0.02	0.02	-1.562382E+01	-1.562382E+01	-1.516104E+01	
s376	10	15	0.01	0.08	0.12	-4.430088E+03	-4.430087E+03	-4.430088E+03	
s377	10	3	0	0.04	0.02	-7.950014E+02	-7.950011E+02	-7.950014E+02	
s378	10	3	0.08	0.03	0.03	-4.770832E+01	-4.776109E+01	-4.776109E+01	
s379	11	0	0.05	0.07	0.1	4.013774E–02	4.013774E–02	4.013774E–02	
s380	12	3	0.08		0.76	3.168344E+00	(IL)	3.168221E+00	t
s381	13	4	0	0.03	0	1.014898E+00	1.014913E+00	1.014898E+00	
s382	13	4	0	0.04	0	1.038312E+00	1.038326E+00	1.038312E+00	
s383	14	1	0.01	0.03	0.02	7.285936E+05	7.285937E+05	7.285936E+05	
s384	15	10	0.03	0.05	0.03	-8.309879E+03	-8.309879E+03	-8.309879E+03	
s385	15	10	0.03	0.06	0.04	-8.314946E+03	-8.314946E+03	-8.314946E+03	

s386-semicon2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
s386	2	0	0	0.01	0	0.000000E+00	0.000000E+00	0.000000E+00	
s387	15	11	0.06	0.06	0.03	-8.249843E+03	-8.249843E+03	-8.249843E+03	
s388	15	15	0.06	0.06	0.02	-5.821084E+03	-5.821084E+03	-5.821084E+03	
s389	15	15	0.05	0.06	0.02	-5.809720E+03	-5.809720E+03	-5.809720E+03	
s391	30	0				(Unb)	(IL)	(IL)	
s392	30	25	0.01	0.22	0.02	-1.101200E+06	-1.101200E+06	-1.101200E+06	
s393	48	3	0.32	0.35	0.18	8.633800E–01	8.633872E–01	8.633800E–01	
s394	20	1	0.09	0.04	0.01	1.916667E+00	1.916667E+00	1.916667E+00	
s395	50	1	1.25	0.07	0.06	1.916667E+00	1.916667E+00	1.916667E+00	
sawpath	589	782	1.48	47.71	2.72	1.815730E+02	1.815899E+02	1.815730E+02	
scon1dls	1000	0			14.96	(IL)	(Time)	0.000000E+00	
scosine	10000	0			24.42	(Time)	(IL)	-9.999000E+03	
scurly10	10000	0			103.89	(Unb)	(Time)	-1.003163E+06	
scurly20	10000	0			171.19	(Unb)	(Time)	-1.003163E+06	
scurly30	10000	0			255.78	(Unb)	(Time)	-1.003163E+06	
semicon1	1000	0			14.16	(IL)	(Time)	0.000000E+00	
semicon2	1000	0			2.78	(IL)	(Time)	0.000000E+00	

sensors-snake

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
sensors	1000	0	971.37		1752.18	-2.103671E+05	ERROR	-2.019862E+05	
sim2bqp	2	0	0.01	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
simbqp	2	0	0	0.03	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
simpllpa	2	2	0	0.04	0.01	1.000000E+00	1.000003E+00	1.000000E+00	
simpllpb	2	3	0	0.04	0.01	1.100000E+00	1.100003E+00	1.100000E+00	
sineali	20	0			0.01	(IL)	(IL)	-1.900962E+03	
sineval	2	0	0.01	0.04	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
sinquad	10000	0		51.63	52.78	(Time)	0.000000E+00	0.000000E+00	
sinrosnb	1000	999	0.04		0.69	-9.990100E+04	ERROR	-9.990100E+04	
sipow1	2	10000	17.84		4.56	-1.000000E+00	ERROR	-1.000000E+00	
sipow1m	2	10000	17.73		4.46	-1.000000E+00	ERROR	-1.000000E+00	
sipow2	2	5000	6.25		1.47	-1.000000E+00	ERROR	-1.000000E+00	
sipow2m	2	5000	6.24	10.95	1.51	-1.000000E+00	-1.000000E+00	-1.000000E+00	
sipow3	4	9998	1.92		5.81	5.356496E–01	ERROR	5.356508E–01	
sipow4	4	10000	2.44		7.15	2.728266E–01	ERROR	2.728283E–01	
sisser	2	0	0	0.02	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
smbank	117	64	0.4	0.58	0.18	-7.129292E+06	-7.129292E+06	-7.129292E+06	
smmpsf	720	263	0.39		1.86	1.046985E+06	(IL)	1.046985E+06	t
snake	2	2			1.34	(IL)	(IL)	0.000000E+00	t

sosqp2-supersim

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
sosqp2	20000	10001			17.26	(Time)	ERROR	-4.998700E+03	
spanhyd	72	32	0.03		0.22	2.397380E+02	ERROR	2.397380E+02	
spiral	3	2	0.02		0.11	0.000000E+00	(IL)	0.000000E+00	t
sreadin3	10000	5000	9816.92		153.14	-1.944257E–05	ERROR	-7.308291E–05	
srosenbr	10000	0		2.14	4.81	(Time)	0.000000E+00	0.000000E+00	
sseblin	192	72	0.03	2.02	0.09	1.617060E+07	1.617060E+07	1.617060E+07	
ssebnln	192	96	0.06		0.25	1.617060E+07	ERROR	1.617060E+07	
ssnlbeam	31	20	0.03	0.06	0.09	3.418772E+02	3.377726E+02	3.377725E+02	
stancmin	3	2	0	0.09	0.01	4.250000E+00	4.250004E+00	4.250000E+00	
static3	434	96				(Unb)	(IL)	(P/D I)	
steenbra	432	108	0.21	8.44	0.28	1.695767E+04	1.695768E+04	1.695768E+04	
steenbrb	468	108	23.9		40.88	9.075855E+03	(IL)	9.075855E+03	t
steenbrc	540	126	35.76		42.57	2.750494E+04	(IL)	2.750494E+04	t
steenbrd	468	108	14.29			9.030082E+03	(IL)	9.030082E+03	t
steenbre	540	126	44.05		149.27	2.746120E+04	(IL)	2.745916E+04	t
steenbrf	468	108	36.46		21.46	8.991848E+03	(IL)	8.991848E+03	t
steenbrg	540	126	31.17		61.68	2.753281E+04	ERROR	2.742093E+04	t
supersim	2	2	0	0.01	0	6.666667E–01	6.666667E–01	6.666667E–01	

svanberg-vanderm2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
svanberg	5000	5000	2297.24		62.08	8.361423E+03	ERROR	8.361423E+03	
swopf	82	91	0.15	0.13	0.1	6.786018E–02	6.786403E–02	6.786018E–02	
synthes1	6	6	0	0.04	0.01	7.592844E–01	7.592908E–01	7.592844E–01	
tame	2	1	0	0.02	0	0.000000E+00	0.000000E+00	0.000000E+00	
tfi2	3	10000	2.49		7.17	6.490285E–01	ERROR	6.490421E–01	
tointqor	50	0	0.05	0.02	0	1.175472E+03	1.175472E+03	1.175472E+03	
trainf	20000	10002	19079.54		843.43	3.107125E+00	ERROR	3.103384E+00	
trainh	20000	10002	2138.88		2165.02	1.241198E+01	ERROR	1.231866E+01	t
tridia	10000	0		8.83	1.89	(Time)	0.000000E+00	0.000000E+00	
trimloss	142	72	0.14	0.95	0.27	9.060000E+00	9.060136E+00	9.060000E+00	
try-b	2	1	0	0.03	0.01	1.000003E+00	0.000000E+00	0.000000E+00	
twirism1	343	313			33.96	(Inf)	ERROR	-1.006758E+00	t
twobars	2	2	0	0.04	0	1.508652E+00	1.508654E+00	1.508652E+00	
ubh1	17997	12000	9921.21		24.22	1.116001E+00	ERROR	1.116001E+00	
ubh5	19997	14000			1366.84	(Time)	ERROR	1.116001E+00	t
vanderm1	100	99	7.42	3.24	3.35	0.000000E+00	0.000000E+00	0.000000E+00	
vanderm2	100	99	6.23	3.29	3.28	0.000000E+00	0.000000E+00	0.000000E+00	

vanderm3-zy2

			Solution Time			Objective Value			
Problem	n	m	SNOPT	NITRO	LOQO	SNOPT	NITRO	LOQO	
vanderm3	100	99	5.22	3.92	4.56	0.000000E+00	0.000000E+00	0.000000E+00	
vanderm4	9	8	0.02	0.07	0.04	0.000000E+00	0.000000E+00	0.000000E+00	
vardim	100	0	0.19	0.09	0.35	0.000000E+00	0.000000E+00	0.000000E+00	
watson	31	0	0.22	0.05	0.07	0.000000E+00	0.000000E+00	0.000000E+00	
womflet	3	3	0	0.04	0	0.000000E+00	0.000000E+00	6.050000E+00	
woods	10000	0		7.09	10.99	(Time)	0.000000E+00	0.000000E+00	
yao	2000	1999	0.09	2.49	11.08	2.731285E+02	1.869451E+02	1.977046E+02	
yfit	3	0	0.02	0.09	0.02	0.000000E+00	0.000000E+00	0.000000E+00	
yfitu	3	0	0.02	0.06	0	0.000000E+00	0.000000E+00	0.000000E+00	
zangwil2	2	0	0	0.01	0	-1.820000E+01	-1.820000E+01	-1.820000E+01	
zangwil3	3	0	0	0.01	0.01	0.000000E+00	0.000000E+00	0.000000E+00	
zecevic2	2	2	0	0.04	0	-4.125000E+00	-4.124999E+00	-4.125000E+00	
zecevic3	2	2	0.01		0	9.730945E+01	ERROR	9.730945E+01	
zecevic4	2	2	0	0.04	0	7.557508E+00	7.557509E+00	7.557508E+00	
zigzag	58	50	0.02	0.15	0.06	3.161735E+00	3.161749E+00	3.161735E+00	
zy2	3	1	0	0.03	0.01	2.006378E+00	2.000004E+00	2.000000E+00	