

Numerical Results for CG_DESCENT (W)

Wolfe line search, 750 problems

Stopping criterion: $\|\nabla f(x_k)\|_\infty \leq 10^{-6}$.

CG-DESCENT: May 3, 2006

1 CG_DESCENT Algorithm. Function: FREUROTH (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	14	130	122	37	.2449212683962E+05	.1421085471520E-12	4
2000	15	34	26	8	.4898425367924E+05	.5123865776113E-09	0
3000	14	127	119	37	.7347638051886E+05	.2842170943040E-13	4
4000	14	108	99	42	.9796850735848E+05	.1607465293318E-04	4
5000	14	124	115	60	.1224606341981E+06	.1308258467247E-04	4
6000	15	33	25	22	.1469527610377E+06	.8594724931754E-10	0
7000	15	33	25	29	.1714448878773E+06	.9421796676179E-10	0
8000	14	101	93	79	.1959370147169E+06	.2557953848736E-12	4
9000	14	128	120	112	.2204291415566E+06	.1421085471520E-12	4
10000	14	130	122	126	.2449212683962E+06	.5684341886081E-13	4
TOTAL	143	948	866	5.52(seconds)			

2 CG_DESCENT Algorithm. Function: Extended Trigonometric

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	65	133	70	20	.2211975977231E-06	.7367996796340E-06	0
2000	73	147	74	44	.1296521076291E-06	.7494762015482E-06	0
3000	81	164	84	74	.9324127290281E-07	.4037018941662E-06	0
4000	73	148	75	91	.7339395039702E-07	.8143473095350E-06	0
5000	75	151	76	112	.5933066833463E-07	.9314381202213E-06	0
6000	80	165	86	151	.5005818403668E-07	.6743899640272E-06	0
7000	84	170	86	177	.4137872752388E-07	.8827633769490E-06	0
8000	82	167	85	200	.3694181483622E-07	.5195673582055E-06	0
9000	86	177	94	239	.3331972684373E-07	.8292456165357E-06	0
10000	82	167	86	249	.2932568007707E-07	.5922587998767E-06	0
TOTAL	781	1589	816	13.57(seconds)			

3 CG_DESCENT Algorithm. Function: SROSENBR (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	33	95	73	9	.5039518606091E-13	.6783000584682E-07	0
2000	35	94	70	16	.1349446116192E-15	.1553960559490E-08	0
3000	31	85	65	23	.4502213662186E-12	.1431121340337E-07	0
4000	36	99	76	36	.1435821170685E-10	.8426445978088E-06	0
5000	33	95	73	42	.2244250863258E-14	.3758314815577E-07	0
6000	35	96	70	51	.2628506125120E-12	.3631968769453E-06	0
7000	38	102	76	66	.1340907067484E-13	.3936344325190E-08	0
8000	34	97	73	69	.8137446389190E-13	.1602104458775E-07	0
9000	32	92	70	73	.3060936752675E-11	.9248309132747E-06	0
10000	30	83	63	74	.1431162523289E-12	.2068763756735E-06	0
TOTAL	337	938	709	4.59(seconds)			

4 CG_DESCENT Algorithm. Function: Extended White & Holst

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	44	130	95	12	.4170691590752E-17	.2748902471086E-08	0
2000	41	123	90	21	.8415139977430E-16	.2078151519793E-08	0
3000	37	129	101	32	.1061590211251E-14	.4476683965111E-07	0
4000	42	122	90	43	.4835647281723E-14	.2373726981921E-07	0
5000	38	99	70	44	.1649677047937E-14	.8997942685806E-08	0
6000	42	128	96	67	.4075010317739E-12	.6739978952557E-08	0
7000	36	106	77	64	.7114664458680E-14	.7762182546532E-07	0
8000	38	117	88	80	.2191853009579E-12	.2223774385461E-06	0
9000	41	110	80	90	.1341606581777E-11	.8708741200121E-06	0
10000	32	91	66	79	.4045360053083E-12	.2929814036249E-07	0
TOTAL	391	1155	853	5.32(seconds)			

5 CG_DESCENT Algorithm. Function: Extended Beale BEALE (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
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1000	15	32	17	2	.6591203682507E-10	.7312296563668E-06	0
2000	15	32	17	4	.1318239746290E-09	.7312293919944E-06	0
3000	15	32	17	5	.1977358463689E-09	.7312291808296E-06	0
4000	15	32	17	8	.2636481069977E-09	.7312296165652E-06	0
5000	15	32	17	9	.3295599880568E-09	.7312294496984E-06	0
6000	15	32	17	11	.3954719080463E-09	.7312293851665E-06	0
7000	15	32	17	13	.4613842879445E-09	.7312297067432E-06	0
8000	15	32	17	15	.5272957322816E-09	.7312292790845E-06	0
9000	15	32	17	16	.5932084322008E-09	.7312297401333E-06	0
10000	15	32	17	18	.6591203823270E-09	.7312296827624E-06	0

TOTAL 150 320 170 1.01(seconds)

6 CG_DESCENT Algorithm. Function: Extended Penalty

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	36	170	142	17	.8831940750670E+03	.5607878443794E-07	4
2000	34	167	138	30	.1814063664869E+04	.6023030377766E-06	4
3000	36	71	39	24	.2755973749503E+04	.9651160232316E-06	0
4000	37	73	40	32	.3704070534948E+04	.6568824113820E-06	0
5000	39	166	133	75	.4656333923744E+04	.1345805273671E-05	4
6000	39	77	42	50	.5611676659140E+04	.9431137898447E-06	0
7000	38	175	143	113	.6569428560737E+04	.5115641102888E-07	4
8000	40	79	43	70	.7529139638522E+04	.4260523556177E-07	0
9000	38	77	41	75	.8490489281459E+04	.5569152724723E-06	0
10000	38	76	40	83	.9453238852842E+04	.9146777883791E-06	0

TOTAL 375 1131 801 5.69(seconds)

7 CG_DESCENT Algorithm. Function: Perturbed Quadratic

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	175	351	176	26	.1686797809298E-12	.9246140403395E-06	0
2000	248	497	249	71	.1827953705256E-12	.9513442584519E-06	0
3000	304	609	305	131	.1882069469579E-12	.9608582763426E-06	0
4000	351	703	352	201	.1979145857269E-12	.9797087645094E-06	0
5000	393	787	394	283	.1868419233043E-12	.9559980966375E-06	0
6000	430	861	431	370	.2048616840813E-12	.9920897968544E-06	0
7000	465	931	466	468	.1939492458728E-12	.9697194045137E-06	0
8000	497	995	498	571	.1988939792795E-12	.9793551883624E-06	0
9000	527	1055	528	681	.2043062148576E-12	.9897630979142E-06	0
10000	556	1113	557	797	.1953336000344E-12	.9715614040600E-06	0

TOTAL 3946 7902 3956 35.99(seconds)

8 CG_DESCENT Algorithm. Function: Raydan 1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	199	425	370	31	.5005000000000E+05	.2367739765754E-05	4
2000	254	516	444	77	.2001000000000E+06	.8447502257566E-05	4
3000	308	591	523	137	.4501500000000E+06	.9412897810945E-05	4
4000	347	650	585	203	.8002000000000E+06	.1368685034134E-04	4
5000	380	700	638	279	.1250250000000E+07	.2105279240565E-04	4
6000	412	747	687	359	.1800300000000E+07	.1983299738496E-04	4
7000	435	782	723	442	.2450350000000E+07	.2597200512857E-04	4
8000	462	819	767	534	.3200400000000E+07	.2412448340994E-04	4
9000	486	851	807	630	.4050450000000E+07	.2592305723362E-04	4
10000	503	874	835	724	.5000500000000E+07	.4072356303119E-04	4

TOTAL 3786 6955 6379 34.16(seconds)

9 CG_DESCENT Algorithm. Function: Raydan 2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	4	9	5	0	.1000000000000E+04	.6923114532664E-06	0
2000	4	9	5	2	.2000000000001E+04	.6886094774605E-06	0
3000	4	9	5	1	.3000000000000E+04	.6887586601488E-06	0
4000	4	9	5	2	.4000000000000E+04	.6890087861287E-06	0
5000	4	9	5	3	.5000000000000E+04	.6922992739386E-06	0
6000	4	9	5	4	.6000000000002E+04	.6886134862039E-06	0
7000	4	9	5	4	.7000000000001E+04	.6765874438326E-06	0
8000	4	9	5	4	.8000000000000E+04	.6735327329811E-06	0
9000	4	9	5	5	.9000000000001E+04	.6815033193257E-06	0
10000	4	9	5	6	.1000000000000E+05	.6808622638468E-06	0

TOTAL 40 90 50 .31(seconds)

10 CG_DESCENT Algorithm. Function: Powell singular (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	77	155	87	13	.3843783524657E-07	.4718923706675E-06	0
2000	124	252	136	42	.1824020656068E-06	.6886612520396E-06	0
3000	31	63	33	16	.7660676896532E-06	.8913790507041E-06	0
4000	69	139	72	46	.5459630548758E-06	.9265632397359E-06	0
5000	53	108	58	44	.2965890114342E-07	.3384616075944E-06	0
6000	613	1227	672	619	.6896807071172E-07	.9571657899987E-06	0
7000	345	711	403	419	.2751537287456E-06	.1968707841510E-06	0
8000	50	103	56	69	.3138761955024E-07	.2929294425519E-06	0
9000	61	123	62	91	.1271787256458E-05	.8302098288385E-06	0
10000	63	127	66	106	.4298541644303E-06	.3531941320316E-06	0

TOTAL	1486	3008	1645	14.65(seconds)			

11 CG_DESCENT Algorithm. Function: Diagonal 1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	296	593	297	57	.2210774188793E-09	.9814424095416E-06	0
2000	296	593	297	115	.2213047150368E-09	.9328109968993E-06	0
3000	296	593	297	172	.2213769405549E-09	.9172118250194E-06	0
4000	296	593	297	230	.2214124101701E-09	.9094990996842E-06	0
5000	296	593	297	286	.2214332962713E-09	.9048900785036E-06	0
6000	296	593	297	345	.2214472131386E-09	.9018279504447E-06	0
7000	296	593	297	401	.2214570874633E-09	.8996482565706E-06	0
8000	296	593	297	459	.2214644631915E-09	.8980128978996E-06	0
9000	296	593	297	517	.2214701673929E-09	.8967405623627E-06	0
10000	296	593	297	573	.2214747571737E-09	.8957289532518E-06	0

TOTAL	2960	5930	2970	31.55(seconds)			

12 CG_DESCENT Algorithm. Function: Diagonal 2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	5	11	6	1	-.2149394739916E+03	.3674314912328E-06	0
2000	5	11	6	2	-.4298789479833E+03	.1656679167183E-06	0
3000	5	11	6	3	-.6448184219745E+03	.9741853446155E-06	0
4000	5	11	6	5	-.8597578959662E+03	.7749033890114E-06	0
5000	5	12	7	6	-.1074697369958E+04	.1483979605865E-10	0
6000	5	11	6	6	-.1289636843950E+04	.1526086994552E-06	0
7000	6	13	7	10	-.1504576317942E+04	.2346325904679E-06	0
8000	6	13	7	10	-.1719515791932E+04	.9652316079745E-06	0
9000	5	12	7	11	-.1934455265925E+04	.2244548991115E-10	0
10000	6	13	7	13	-.2149394739915E+04	.9557484035305E-06	0

TOTAL	53	118	65	.67(seconds)			

13 CG_DESCENT Algorithm. Function: Hager

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	41	174	157	12	-.4474419132154E+05	.1871530970884E-05	4
2000	44	171	147	25	-.1471735005125E+06	.1922236698629E-04	4
3000	50	191	167	41	-.2925501003138E+06	.1633411806222E-04	4
4000	51	193	168	56	-.4746425076978E+06	.3234493467121E-04	4
5000	55	194	169	71	-.6896067628040E+06	.2138656282454E-04	4
6000	55	200	175	86	-.9347349321991E+06	.3785615348667E-04	4
7000	53	192	165	97	-.1207973806382E+07	.9318247941708E-04	4
8000	59	196	171	115	-.1507691037216E+07	.5068239277361E-04	4
9000	59	206	179	135	-.1832544956898E+07	.9526652694280E-04	4
10000	63	203	178	154	-.2181405217178E+07	.4737081758915E-04	4

TOTAL	530	1920	1676	7.92(seconds)			

14 CG_DESCENT Algorithm. Function: Generalized Tridiagonal 1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	23	42	31	5	.9972103074860E+03	.6292247389794E-06	0
2000	23	41	30	10	.1997210307486E+04	.6240584657924E-06	0
3000	23	135	126	41	.2997210307486E+04	.5674918486243E-06	4
4000	22	119	109	46	.3997210307486E+04	.8092220238343E-06	4
5000	22	117	107	58	.4997210307486E+04	.1160067288009E-05	4
6000	22	136	126	82	.5997210307486E+04	.9033008625536E-06	4
7000	22	117	107	79	.6997210307486E+04	.1024366360625E-05	4
8000	22	133	123	102	.7997210307486E+04	.1015125545401E-05	4
9000	23	140	131	126	.8997210307486E+04	.9617952123619E-06	4

10000	22	135	125	130	.9997210307486E+04	.9131802374274E-06	4

TOTAL	224	1115	1015	6.79(seconds)			

15 CG_DESCENT Algorithm. Function: Extended Tridiagonal 1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	12	25	15	2	.1880171782029E-06	.9280342149463E-06	0
2000	12	25	15	4	.3760343276252E-06	.9280359606839E-06	0
3000	12	25	15	6	.5640514279953E-06	.9280396028642E-06	0
4000	12	25	15	9	.7520684835354E-06	.9280427841965E-06	0
5000	12	25	15	10	.9400860587113E-06	.9280304164909E-06	0
6000	12	25	15	12	.1128103505284E-05	.9280250086152E-06	0
7000	12	25	15	15	.1316119632669E-05	.9280451704282E-06	0
8000	12	25	15	16	.1504136537245E-05	.9280443378040E-06	0
9000	12	25	15	19	.1692153454801E-05	.9280470271095E-06	0
10000	12	25	15	20	.1880172638544E-05	.9280237324758E-06	0

TOTAL	120	250	150	1.13(seconds)			

16 CG_DESCENT Algorithm. Function: Extended Three Expo Terms

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	1	104	104	7	.1357256127054E+04	.9256204638223E+00	4
2000	1	104	104	13	.2714512254108E+04	.9256204638223E+00	4
3000	1	104	104	21	.4071768381162E+04	.9256204638223E+00	4
4000	1	104	104	26	.5429024508216E+04	.9256204638223E+00	4
5000	1	104	104	34	.6786280635270E+04	.9256204638223E+00	4
6000	1	104	104	40	.8143536762324E+04	.9256204638223E+00	4
7000	1	104	104	47	.9500792889377E+04	.9256204638223E+00	4
8000	1	104	104	54	.1085804901643E+05	.9256204638223E+00	4
9000	1	104	104	60	.1221530514349E+05	.9256204638223E+00	4
10000	1	104	104	67	.1357256127054E+05	.9256204638223E+00	4

TOTAL	10	1040	1040	3.69(seconds)			

17 CG_DESCENT Algorithm. Function: Generalized Tridiagonal 2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	43	85	46	17	.1114854332625E+01	.7552639998007E-06	0
2000	41	81	44	32	.1114854332625E+01	.6042351199934E-06	0
3000	44	87	47	52	.1114854332625E+01	.8633228307151E-06	0
4000	44	87	47	70	.1114854332625E+01	.9277859039342E-06	0
5000	45	89	48	89	.1114854332625E+01	.8350912782918E-06	0
6000	45	89	48	106	.1114854332625E+01	.9080769920480E-06	0
7000	45	89	48	123	.1114854332625E+01	.9809683320065E-06	0
8000	45	89	48	142	.1114854332625E+01	.8485002862052E-06	0
9000	45	89	48	158	.1114854332625E+01	.8902175269253E-06	0
10000	45	88	49	178	.1114854332625E+01	.9472175122569E-06	0

TOTAL	442	873	473	9.67(seconds)			

18 CG_DESCENT Algorithm. Function: Diagonal 4

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	3	7	5	0	.4332211321525E-14	.4162790919299E-08	0
2000	3	7	5	1	.2997479801488E-14	.2448459400464E-08	0
3000	3	7	5	1	.2184787033568E-13	.5397264925871E-08	0
4000	3	7	5	2	.2641267017083E-13	.5139323335175E-08	0
5000	3	7	5	2	.1743750459462E-12	.1181100787772E-07	0
6000	3	7	5	2	.2496788138278E-12	.1290164230306E-07	0
7000	2	5	3	2	.1709497512142E-10	.9805607137145E-06	0
8000	3	7	5	4	.1517772823652E-11	.2754788047866E-07	0
9000	3	7	5	3	.5152258228669E-12	.1513238332088E-07	0
10000	3	7	5	4	.2354691653879E-11	.3068999221674E-07	0

TOTAL	29	68	48	.21(seconds)			

19 CG_DESCENT Algorithm. Function: Diagonal 5

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	3	7	4	1	.2000000000000E+04	.1612420403724E-06	0
2000	3	7	4	1	.4000000000000E+04	.1606937448973E-06	0
3000	3	7	4	2	.6000000000000E+04	.1619058429339E-06	0
4000	3	7	4	2	.8000000000000E+04	.1628213971584E-06	0
5000	3	7	4	3	.1000000000000E+05	.1591886559341E-06	0

6000	3	7	4	4	.1200000000000E+05	.1586872884727E-06	0
7000	3	7	4	4	.1400000000000E+05	.1620049460971E-06	0
8000	3	7	4	5	.1600000000000E+05	.1612772967605E-06	0
9000	3	7	4	5	.1800000000000E+05	.1597927260857E-06	0
10000	3	7	4	6	.2000000000000E+05	.1597148807619E-06	0

TOTAL	30	70	40	.33(seconds)			

20 CG_DESCENT Algorithm. Function: HIMMELBC (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	8	20	13	1	.1965431900456E-12	.1627907973404E-06	0
2000	8	20	13	3	.4683030323690E-11	.5642958553884E-06	0
3000	8	20	13	5	.1227066345118E-10	.7455399280194E-06	0
4000	8	20	13	6	.2070893137370E-10	.8380161928265E-06	0
5000	8	20	13	7	.2926939383421E-10	.8901916148410E-06	0
6000	8	20	13	9	.3771062929063E-10	.9214577896270E-06	0
7000	8	20	13	10	.4595398803221E-10	.9408155242186E-06	0
8000	8	20	13	11	.5398087879773E-10	.9529279612769E-06	0
9000	8	20	13	14	.6179584965044E-10	.9604137242837E-06	0
10000	8	20	13	14	.6941193456249E-10	.9648352753627E-06	0

TOTAL	80	200	130	.80(seconds)			

21 CG_DESCENT Algorithm. Function: Generalized PSC1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	229	543	414	150	.9987220414474E+03	.1984152905532E-05	4
2000	247	573	458	317	.1998722041592E+04	.4012579605434E-05	4
3000	236	557	372	445	.2998722041463E+04	.3033381978945E-04	4
4000	291	661	557	756	.3998722041466E+04	.8647436709873E-05	4
5000	149	391	271	501	.4998722041504E+04	.4452246151948E-05	4
6000	211	536	385	846	.5998722041918E+04	.2246752533708E-04	4
7000	227	557	437	1052	.6998722041945E+04	.3592357908078E-04	4
8000	222	555	372	1161	.7998722046758E+04	.5091518960043E-04	4
9000	228	562	425	1380	.8998722042613E+04	.3860583138182E-04	4
10000	224	560	439	1536	.9998722043016E+04	.1690972249997E-04	4

TOTAL	2264	5495	4130	81.44(seconds)			

22 CG_DESCENT Algorithm. Function: Extended PSC1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	13	27	14	4	.3865995282465E+03	.3697579755713E-06	0
2000	12	25	13	8	.7731990564932E+03	.8965840933017E-06	0
3000	13	27	14	12	.1159798584740E+04	.9459382487309E-06	0
4000	12	25	13	15	.1546398112986E+04	.2494126366548E-06	0
5000	13	27	15	22	.1932997641232E+04	.3209273807814E-06	0
6000	13	26	15	25	.2319597169479E+04	.6464834295672E-07	0
7000	13	28	16	31	.2706196697725E+04	.2345301730600E-10	0
8000	13	27	15	35	.3092796225972E+04	.4473853272291E-06	0
9000	14	29	17	42	.3479395754218E+04	.4205513731703E-06	0
10000	15	31	19	51	.3865995282465E+04	.1833844721633E-06	0

TOTAL	131	272	151	2.45(seconds)			

23 CG_DESCENT Algorithm. Function: Extended Powell

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	128	259	148	19	.5823308848250E-08	.6861368807191E-06	0
2000	151	322	187	45	.1579491248943E-06	.8467986813767E-06	0
3000	134	272	161	59	.6799387991224E-07	.5219338237161E-06	0
4000	1380	2761	1595	805	.3888367744396E-07	.9972652467081E-06	0
5000	97	197	110	70	.9297497279805E-09	.9698710405192E-07	0
6000	99	204	111	85	.1042194918231E-05	.8951517856020E-06	0
7000	240	495	296	251	.1933698725819E-05	.9497415089746E-06	0
8000	819	1642	1034	975	.1343564407048E-06	.9528056307298E-06	0
9000	105	213	120	137	.2667391781680E-06	.5431107437605E-06	0
10000	58	118	65	84	.5671204493593E-09	.4632238086935E-06	0

TOTAL	3211	6483	3827	25.30(seconds)			

24 CG_DESCENT Algorithm. Function: Extended Block-Diagonal BD1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	19	50	42	5	.3148727589281E-10	.3168629529249E-06	0

2000	19	50	42	10	.6297455185812E-10	.3168629587262E-06	0
3000	19	50	42	15	.9446182687805E-10	.3168629485255E-06	0
4000	19	50	42	20	.1259491011386E-09	.3168629416986E-06	0
5000	19	50	42	25	.1574363778488E-09	.3168629482930E-06	0
6000	19	50	42	30	.1889236538404E-09	.3168629389290E-06	0
7000	19	50	42	34	.2204109252506E-09	.3168629409056E-06	0
8000	19	50	42	40	.2518982151873E-09	.3168629719163E-06	0
9000	19	50	42	45	.2833854945759E-09	.3168629935464E-06	0
10000	19	50	42	50	.3148727724301E-09	.3168629947690E-06	0

TOTAL 190 500 420 2.74(seconds)

25 CG_DESCENT Algorithm. Function: Extended Maratos

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	62	174	134	13	-.5003121103484E+03	.1435378071630E-06	0
2000	70	291	248	40	-.1000624220697E+04	.2447153590879E-10	4
3000	57	268	228	54	-.1500936331045E+04	.2353796537680E-06	4
4000	59	181	142	54	-.2001248441393E+04	.5419404552895E-08	0
5000	55	253	216	87	-.2501560551742E+04	.2625999164785E-06	4
6000	61	186	148	84	-.3001872662090E+04	.1989421738458E-08	0
7000	39	189	164	88	-.3502184772439E+04	.7316397063750E-06	4
8000	58	183	147	109	-.4002496882787E+04	.9407833490016E-07	0
9000	57	265	229	161	-.4502808993135E+04	.4916422824408E-10	4
10000	50	167	133	121	-.5003121103484E+04	.4619828652963E-07	0

TOTAL 568 2157 1789 8.11(seconds)

26 CG_DESCENT Algorithm. Function: CLIFF (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	16	34	19	2	.9989330683888E+02	.9147089106154E-06	0
2000	15	32	18	4	.1997866136777E+03	.6387634687854E-07	0
3000	16	34	19	7	.2996799205166E+03	.4333174893345E-06	0
4000	15	32	18	8	.3995732273554E+03	.4780348739075E-07	0
5000	15	36	25	11	.4994665341943E+03	.4061180858272E-07	0
6000	15	32	18	12	.5993598410331E+03	.1016007318277E-06	0
7000	15	32	18	14	.6992531478720E+03	.4556410737599E-06	0
8000	15	37	26	18	.7991464547112E+03	.9093125241666E-06	0
9000	15	32	18	18	.8990397615496E+03	.1846890707036E-07	0
10000	18	49	37	29	.9989330683885E+03	.2813509827337E-06	0

TOTAL 155 350 216 1.23(seconds)

27 CG_DESCENT Algorithm. Function: Quadratic Diagonal Perturbed

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	101	203	122	15	.3205290338424E-10	.9741590365549E-06	0
2000	143	287	173	42	.3493606534217E-10	.9760405960394E-06	0
3000	169	339	204	74	.3780477192051E-10	.9918444106990E-06	0
4000	201	403	245	120	.3759405220210E-10	.9792074191215E-06	0
5000	216	433	261	158	.3876480086593E-10	.9801647161852E-06	0
6000	247	495	307	218	.4222723031513E-10	.9967723861187E-06	0
7000	253	507	305	261	.4087428084022E-10	.9869707428582E-06	0
8000	268	537	322	316	.4524421404236E-10	.9750128619594E-06	0
9000	297	595	370	393	.4760957727061E-10	.9940470545255E-06	0
10000	306	613	376	450	.4681124295927E-10	.9953142175651E-06	0

TOTAL 2201 4412 2685 20.47(seconds)

28 CG_DESCENT Algorithm. Function: WOODS (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	207	449	267	49	.2079833417434E-09	.8799090323535E-06	0
2000	158	361	230	78	.3972415543249E-09	.8914114340343E-06	0
3000	290	620	357	201	.1961711430427E-09	.8601933632770E-06	0
4000	171	377	222	161	.1072328156221E-09	.5721517381050E-06	0
5000	269	601	350	318	.6693280576058E-10	.5280359541478E-06	0
6000	344	727	401	469	.5088119674461E-10	.7092263402015E-06	0
7000	255	552	314	414	.8552374474315E-10	.6899516268000E-06	0
8000	237	530	316	451	.4089245530262E-09	.7639800734364E-06	0
9000	156	355	215	342	.3134649040863E-10	.5426009994091E-06	0
10000	192	418	249	451	.3622678907615E-09	.4887297652878E-06	0

TOTAL 2279 4990 2921 29.34(seconds)

29 CG_DESCENT Algorithm. Function: Extended Hiebert

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	75	262	211	14	.2504212137449E-11	.5777658986502E-06	0
2000	68	200	154	24	.8725489165239E-16	.2948013388953E-07	0
3000	73	208	155	36	.2725390774707E-14	.3781490676293E-08	0
4000	73	206	158	48	.4095223036642E-13	.4363839387096E-06	0
5000	71	248	194	66	.5175147562623E-12	.1973051626710E-06	0
6000	64	221	182	71	.3411277884422E-13	.4185938707945E-07	0
7000	67	202	158	80	.2272705806477E-12	.4545798044143E-07	0
8000	76	244	188	108	.1634285220949E-15	.2454221714784E-08	0
9000	67	211	165	105	.5948556389818E-13	.7624301187427E-07	0
10000	76	226	175	129	.2359145830226E-12	.6850386924026E-06	0

TOTAL	710	2228	1740	6.81(seconds)			

30 CG_DESCENT Algorithm. Function: Quadratic QF1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	175	351	176	15	-.4999999996102E-03	.9938238462262E-06	0
2000	249	499	250	45	-.2499999996644E-03	.9283955279490E-06	0
3000	305	611	306	82	-.16666666663025E-03	.9601463468563E-06	0
4000	352	705	353	125	-.1249999996046E-03	.9935783953585E-06	0
5000	394	789	395	175	-.9999999961837E-04	.9783674771599E-06	0
6000	432	865	433	230	-.8333333296326E-04	.9654440356238E-06	0
7000	467	935	468	292	-.7142857106992E-04	.9524860611184E-06	0
8000	499	999	500	354	-.6249999962503E-04	.9705557875179E-06	0
9000	529	1059	530	424	-.555555516411E-04	.9881959800294E-06	0
10000	558	1117	559	496	-.4999999962067E-04	.9750489990144E-06	0

TOTAL	3960	7930	3970	22.38(seconds)			

31 CG_DESCENT Algorithm. Function: Extended Quadratic Penalty QP1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	15	127	116	5	.3990006250000E+04	.9008146353978E-10	4
2000	14	30	17	4	.7990003125000E+04	.1667994914418E-06	0
3000	15	30	18	7	.1199000208333E+05	.1373482639365E-08	0
4000	16	38	25	10	.1599000156250E+05	.8609616406880E-06	0
5000	15	132	118	27	.1999000125000E+05	.2508108605892E-04	4
6000	15	131	117	32	.2399000104167E+05	.3330282690230E-04	4
7000	17	34	21	18	.2799000089286E+05	.4523203675189E-09	0
8000	16	33	20	18	.3199000078125E+05	.6525690918503E-07	0
9000	17	111	97	44	.3599000069445E+05	.1139404010657E-07	4
10000	16	133	118	56	.3999000062500E+05	.8826836014995E-04	4

TOTAL	156	799	667	2.21(seconds)			

32 CG_DESCENT Algorithm. Function: Extended Quadratic Penalty QP2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	48	127	90	11	.2285751091192E-23	.3012701199623E-10	0
2000	40	100	71	19	.3369970265279E-15	.2947911070697E-06	0
3000	47	133	95	37	.2641734122299E-19	.5702531780112E-08	0
4000	45	129	98	47	.9777096995771E-17	.8651568350614E-09	0
5000	42	123	92	56	.1526014361554E-21	.1324451659457E-09	0
6000	49	132	100	74	.3452917943855E-22	.9947598300641E-10	0
7000	40	111	81	72	.9958329844704E-14	.2601262849651E-06	0
8000	43	126	96	93	.8274477852337E-18	.7516405275972E-08	0
9000	51	148	111	122	.1726098040197E-20	.6508571459563E-09	0
10000	43	111	82	104	.1021846425812E-17	.1202522526002E-07	0

TOTAL	448	1240	916	6.35(seconds)			

33 CG_DESCENT Algorithm. Function: Quadratic QF2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	340	634	395	71	-.1000124968766E+01	.9204035605892E-06	0
2000	479	894	552	200	-.1000062492189E+01	.9927254662345E-06	0
3000	594	1101	690	372	-.1000041663195E+01	.9805132794946E-06	0
4000	687	1271	799	572	-.1000031248047E+01	.9996349730624E-06	0
5000	770	1422	897	800	-.1000024998750E+01	.9962266134256E-06	0
6000	857	1569	1011	1065	-.1000020832465E+01	.9581783859680E-06	0
7000	925	1693	1091	1341	-.1000017856505E+01	.9893776762304E-06	0
8000	988	1808	1165	1636	-.1000015624512E+01	.9781945493614E-06	0
9000	1049	1917	1239	1953	-.1000013888503E+01	.9693749177808E-06	0
10000	1106	2020	1307	2287	-.1000012499687E+01	.9752214205072E-06	0

TOTAL 7795 14329 9146 102.97(seconds)

34 CG_DESCENT Algorithm. Function: Extended EP1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	4	9	7	1	.7931762881473E+04	.9924006061368E-13	0
2000	3	7	5	0	.1586352576295E+05	.6675215935559E-14	0
3000	3	7	5	2	.2379528864442E+05	.6675215935559E-14	0
4000	3	16	14	2	.3172705152589E+05	.2641322654102E-06	0
5000	3	103	101	14	.3965881440736E+05	.6675215935559E-14	4
6000	3	104	102	17	.4759057728884E+05	.9924006061368E-13	4
7000	3	105	103	20	.5552234017031E+05	.6675215935559E-14	4
8000	3	104	102	22	.6345410305178E+05	.6675215935559E-14	4
9000	3	104	102	26	.7138586593325E+05	.6675215935559E-14	4
10000	3	105	103	28	.7931762881473E+05	.6675215935559E-14	4

TOTAL 31 664 644 1.32(seconds)

35 CG_DESCENT Algorithm. Function: Extended Tridiagonal 2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	32	57	41	5	.3893393944764E+03	.7141444857972E-06	0
2000	32	56	42	9	.7790685180764E+03	.8417362249158E-06	0
3000	33	58	45	14	.1168797641676E+04	.7626497903757E-06	0
4000	33	57	44	18	.1558526765277E+04	.9200424491151E-06	0
5000	35	58	49	24	.1948255888877E+04	.5697222483503E-06	0
6000	33	58	47	28	.2337985012477E+04	.9722296105408E-06	0
7000	33	56	47	32	.2727714136076E+04	.9228032241682E-06	0
8000	34	58	49	38	.3117443259676E+04	.8981913828254E-06	0
9000	33	57	47	41	.3507172383276E+04	.7296276068325E-06	0
10000	33	55	46	45	.3896901506876E+04	.7419728284830E-06	0

TOTAL 331 570 457 2.54(seconds)

36 CG_DESCENT Algorithm. Function: BDQRTIC (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	589	1288	854	407	.3983817950577E+04	.1582976737929E-03	4
2000	794	1720	1028	1059	.7989427682562E+04	.4491554466465E-02	4
3000	1101	2348	1347	2145	.1199503741451E+05	.4074399591086E-02	4
4000	741	1680	1071	2085	.1600064714647E+05	.6431231698455E-02	4
5000	687	1652	1309	2749	.2000625687870E+05	.1011471063203E-02	4
6000	1537	3258	1817	5932	.2401186661056E+05	.2749410479799E-02	4
7000	1810	3812	2673	8644	.2801747634468E+05	.1469801820909E-01	4
8000	1631	3397	2480	8980	.3202308607455E+05	.9654772824621E-03	4
9000	1352	2975	1837	8373	.3602869580629E+05	.2371695098633E-03	4
10000	1872	3941	2175	11937	.4003430553975E+05	.6450210744142E-02	4

TOTAL 12114 26071 16591 523.11(seconds)

37 CG_DESCENT Algorithm. Function: TRIDIA (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	338	677	339	49	.7658517148716E-14	.8912144234701E-06	0
2000	487	975	488	140	.6190248381430E-14	.9655600292073E-06	0
3000	602	1205	603	259	.4894426549968E-14	.9381416811950E-06	0
4000	696	1393	697	400	.6203956856340E-14	.9534409950291E-06	0
5000	782	1565	783	560	.5079410016088E-14	.9933846534160E-06	0
6000	857	1715	858	738	.5807226014544E-14	.9896004609092E-06	0
7000	930	1861	931	933	.4344613994233E-14	.9771509999914E-06	0
8000	995	1991	996	1141	.4529956148928E-14	.9719823410347E-06	0
9000	1057	2115	1058	1362	.4226320570704E-14	.9918452678487E-06	0
10000	1115	2231	1116	1597	.4303812533319E-14	.9670774511349E-06	0

TOTAL 7859 15728 7869 71.79(seconds)

38 CG_DESCENT Algorithm. Function: ARWHEAD (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	9	23	17	5	.0000000000000E+00	.2608442543730E-08	0
2000	12	27	18	9	.0000000000000E+00	.1044164241152E-06	0
3000	10	22	15	12	.0000000000000E+00	.2584078206561E-07	0
4000	14	32	19	22	.3251793365827E-14	.4809569978438E-07	0
5000	13	32	23	28	.0000000000000E+00	.4361765194843E-10	0
6000	9	118	111	129	.0000000000000E+00	.1835665586872E-07	4

7000	9	121	114	148	.0000000000000E+00	.2868229703772E-10	4
8000	8	67	61	89	.1474330640211E-13	.2961523668572E-04	8
9000	8	70	64	111	.2244049130545E-13	.1159980316754E-03	8
10000	12	80	70	141	.2981257818738E-13	.4168221506254E-04	8

TOTAL 104 592 512 6.94(seconds)

39 CG_DESCENT Algorithm. Function: NONDIA (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	12	26	18	3	.8244831322310E-19	.7864770612218E-08	0
2000	10	31	25	8	.1475856745325E-22	.2338065296926E-09	0
3000	9	21	14	8	.2006978852431E-16	.4902244260643E-06	0
4000	10	23	15	11	.1318478176286E-19	.5095164601339E-07	0
5000	7	25	20	14	.3828149226608E-16	.3685130785011E-06	0
6000	7	26	22	19	.6686524717116E-16	.1844340697725E-06	0
7000	8	28	23	24	.2519749304620E-17	.2844229363240E-06	0
8000	9	28	23	27	.2572763800059E-20	.6878623226559E-08	0
9000	11	25	17	28	.4316586082847E-17	.2255472025322E-06	0
10000	9	27	22	34	.1375010804118E-18	.1857400828692E-06	0

TOTAL 92 260 199 1.76(seconds)

40 CG_DESCENT Algorithm. Function: NONDQUAR (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	3489	6986	3741	800	.1397688258466E-05	.6449668286153E-06	0
2000	4040	8084	4133	1820	.9721175586877E-06	.8554151371218E-06	0
3000	3025	6057	3101	2050	.1672159537924E-05	.7910891723728E-06	0
4000	4014	8039	4119	3634	.1082545396337E-05	.9026434232690E-06	0
5000	5007	10029	5223	5795	.7597592177650E-06	.8947571980875E-06	0
6000	6006	12024	6523	8325	.5545584789453E-06	.7994589520324E-06	0
7000	7004	14022	7193	11085	.4511451707727E-06	.5502937571578E-06	0
8000	8007	16027	8308	14499	.3638104919065E-06	.5925461165472E-06	0
9000	9007	18032	9881	18834	.2900488690605E-06	.2318165128952E-06	0
10000	10007	20034	10697	23021	.2552505606527E-06	.5167765038422E-06	0

TOTAL 59606 119334 62919 898.63(seconds)

41 CG_DESCENT Algorithm. Function: DQDRTIC (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	7	15	8	2	.3698717686528E-15	.3815162621826E-07	0
2000	7	15	8	3	.8603785740527E-15	.5840779208972E-07	0
3000	7	15	8	6	.1159352432551E-14	.6950611832177E-07	0
4000	7	15	8	6	.1558182266565E-14	.8349525261194E-07	0
5000	7	15	8	9	.5653718382301E-15	.4732421152459E-07	0
6000	7	15	8	11	.1422657487950E-14	.1036735436916E-06	0
7000	7	15	8	12	.1024123172677E-13	.2113397727954E-06	0
8000	7	15	8	14	.2100006428036E-13	.3100832685340E-06	0
9000	7	15	8	16	.4273515951787E-13	.4143521332353E-06	0
10000	7	15	8	17	.7112469390547E-13	.5298228360816E-06	0

TOTAL 70 150 80 .96(seconds)

42 CG_DESCENT Algorithm. Function: EG2 (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	69	263	216	15	-.9989999999997E+03	.2614670465880E-04	4
2000	72	266	239	32	-.1999499999974E+04	.3252140987321E-03	4
3000	59	272	243	46	-.2998999999923E+04	.1233591289215E-02	4
4000	140	389	294	98	-.3999499999459E+04	.1364445013761E-02	4
5000	39	197	171	52	-.4999499999988E+04	.1112055974760E-03	4
6000	78	296	293	110	-.5999499999972E+04	.9040801911704E-03	4
7000	38	198	180	74	-.6999499999956E+04	.3575988663619E-03	4
8000	884	1908	1090	1024	-.79994999985022E+04	.2467324432024E-02	4
9000	323	761	484	451	-.89994999990604E+04	.1044803268839E-02	4
10000	133	497	474	306	-.9998999993926E+04	.1033549135905E-02	4

TOTAL 1835 5047 3684 22.08(seconds)

43 CG_DESCENT Algorithm. Function: DIXMAANA (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	9	19	10	3	.1000000000000E+01	.3159933164435E-07	0
2000	9	19	10	7	.1000000000005E+01	.1697459886079E-06	0

3000	9	19	10	11	.1000000000000E+01	.6243001696003E-08	0
4000	9	19	10	14	.1000000000000E+01	.1699759433397E-07	0
5000	9	19	10	18	.1000000000000E+01	.2658967782296E-06	0
6000	9	19	10	21	.1000000000000E+01	.6263177310750E-08	0
7000	9	19	10	25	.1000000000000E+01	.6750926464944E-08	0
8000	9	19	10	29	.1000000000001E+01	.2549227663298E-06	0
9000	9	19	10	32	.1000000000000E+01	.6550386980129E-08	0
10000	9	19	10	36	.1000000000000E+01	.8861800137731E-08	0

TOTAL 90 190 100 1.96(seconds)

44 CG_DESCENT Algorithm. Function: DIXMAANB (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	20	53	33	10	.1000000000000E+01	.4488539175706E-06	0
2000	21	55	35	22	.1000000000000E+01	.1158329455432E-06	0
3000	20	53	33	32	.1000000000002E+01	.8345430863473E-06	0
4000	20	53	33	42	.1000000000002E+01	.7152868746572E-06	0
5000	20	53	33	52	.1000000000001E+01	.8355576898244E-06	0
6000	20	53	33	63	.1000000000001E+01	.8693660430411E-06	0
7000	20	53	33	73	.1000000000000E+01	.1702666135473E-06	0
8000	20	53	33	84	.1000000000000E+01	.7159380206433E-06	0
9000	20	54	34	97	.1000000000000E+01	.1770349757411E-06	0
10000	20	53	34	106	.1000000000000E+01	.2849581952621E-06	0

TOTAL 201 533 334 5.81(seconds)

45 CG_DESCENT Algorithm. Function: DIXMAANC (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	27	76	49	16	.1000000000000E+01	.5949582981758E-06	0
2000	27	75	48	29	.1000000000001E+01	.8372183461592E-06	0
3000	27	76	49	46	.1000000000000E+01	.1599895002957E-06	0
4000	28	91	63	74	.1000000000000E+01	.6432810624202E-06	0
5000	28	78	51	78	.1000000000000E+01	.1290318724196E-06	0
6000	28	78	51	94	.1000000000001E+01	.7099519136252E-06	0
7000	28	78	52	111	.1000000000000E+01	.5738978810102E-06	0
8000	30	82	52	131	.1000000000000E+01	.5690964244878E-06	0
9000	27	76	50	138	.1000000000000E+01	.5838326210387E-06	0
10000	28	79	52	160	.1000000000000E+01	.6858320580289E-06	0

TOTAL 278 789 517 8.77(seconds)

46 CG_DESCENT Algorithm. Function: DIXMAANE (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	145	291	146	65	.10000000000081E+01	.9599995060714E-06	0
2000	192	385	193	173	.10000000000276E+01	.9361579467653E-06	0
3000	225	451	226	305	.10000000000683E+01	.9499772346643E-06	0
4000	264	529	265	475	.10000000000303E+01	.9363447380455E-06	0
5000	284	569	285	640	.10000000000791E+01	.9747471754628E-06	0
6000	302	605	303	817	.1000000001517E+01	.9847310195545E-06	0
7000	323	647	324	1018	.1000000001694E+01	.9940916009266E-06	0
8000	345	691	346	1243	.1000000001509E+01	.9934283976919E-06	0
9000	361	723	362	1463	.1000000001914E+01	.9998356891951E-06	0
10000	375	751	376	1688	.1000000002516E+01	.9993767403813E-06	0

TOTAL 2816 5642 2826 78.87(seconds)

47 CG_DESCENT Algorithm. Function: Partial Perturbed Quadratic

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	138	277	139	136	.2266540440997E-12	.9827017651503E-06	0
2000	161	323	171	637	.2916837333960E-12	.9555030080053E-06	0
3000	142	285	154	1267	.3801849792736E-12	.8925644547517E-06	0
4000	93	187	104	1507	.4177576644172E-12	.9863442756669E-06	0
5000	62	125	69	1561	.2723111018454E-12	.9533608342990E-06	0
6000	47	95	56	1820	.1226894722132E-12	.7382424194872E-06	0
7000	29	59	35	1547	.1399370120063E-12	.7307672370186E-06	0
8000	24	49	28	1618	.4775896592646E-13	.6448697418263E-06	0
9000	21	43	24	1752	.5167373769831E-13	.9660423041976E-06	0
10000	19	39	22	1983	.2648058872694E-13	.7037700402980E-06	0

TOTAL 736 1482 802 138.28(seconds)

48 CG_DESCENT Algorithm. Function: Broyden Tridiagonal

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	41	84	43	4	.4371606562114E-13	.6368371012092E-06	0
2000	36	73	37	6	.6117161814555E-13	.6527532678055E-06	0
3000	34	69	35	10	.5999933324155E-13	.8236795920798E-06	0
4000	34	69	35	12	.6164359297290E-13	.7737440661735E-06	0
5000	34	69	35	16	.5709925232054E-13	.7450113310681E-06	0
6000	34	69	35	19	.5134070823914E-13	.7080801406278E-06	0
7000	34	69	35	22	.4622917151352E-13	.6372258686650E-06	0
8000	34	69	35	26	.4189458184766E-13	.5589394607546E-06	0
9000	33	67	34	27	.1240523271040E-12	.9912339268287E-06	0
10000	33	67	34	31	.1207440689404E-12	.9219349415349E-06	0
TOTAL	347	705	358	1.73(seconds)			

49 CG_DESCENT Algorithm. Function: Almost Perturbed Quadratic

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	175	351	176	15	.1907481251301E-12	.9833711977058E-06	0
2000	249	499	250	46	.1642303474105E-12	.9185224692438E-06	0
3000	305	611	306	81	.1782071489885E-12	.9500427046338E-06	0
4000	352	705	353	125	.1935143005483E-12	.9830928224148E-06	0
5000	394	789	395	176	.1867682008708E-12	.9680773050630E-06	0
6000	432	865	433	230	.1811142727086E-12	.9552794414987E-06	0
7000	466	933	467	291	.1997841246458E-12	.9953888680119E-06	0
8000	499	999	500	355	.1835117337955E-12	.9602914353170E-06	0
9000	529	1059	530	424	.1915727757346E-12	.9777489458071E-06	0
10000	558	1117	559	496	.1856458645009E-12	.9647901409460E-06	0
TOTAL	3959	7928	3969	22.39(seconds)			

50 CG_DESCENT Algorithm. Function: Tridiagonal Perturbed Quadratic

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	167	335	168	24	.6157837815223E-13	.7604291292949E-06	0
2000	234	469	235	68	.1367860668827E-12	.9465469113612E-06	0
3000	288	577	289	126	.1084308704550E-12	.9275740798040E-06	0
4000	333	667	334	194	.1043735097847E-12	.9178689327301E-06	0
5000	371	743	372	271	.1351018460471E-12	.9011270582675E-06	0
6000	406	813	407	355	.1476584888150E-12	.9854936160593E-06	0
7000	439	879	440	449	.1404875405282E-12	.9616235918567E-06	0
8000	469	939	470	548	.1487273212048E-12	.9916207300617E-06	0
9000	500	1001	501	656	.1084458381628E-12	.9383350103536E-06	0
10000	525	1051	526	765	.1406798981610E-12	.9684448387706E-06	0
TOTAL	3732	7474	3742	34.56(seconds)			

51 CG_DESCENT Algorithm. Function: EDENSCH (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	24	140	128	16	.6003284592021E+04	.1294142877306E-05	4
2000	23	42	31	12	.1200328459202E+05	.8699211520025E-06	0
3000	21	130	121	44	.1800328459202E+05	.1882199921033E-05	4
4000	23	117	112	55	.2400328459202E+05	.5545363119605E-06	4
5000	22	136	128	77	.3000328459202E+05	.2139764211336E-05	4
6000	22	115	105	79	.3600328459202E+05	.3132293314745E-05	4
7000	21	137	126	107	.4200328459202E+05	.4141610686551E-05	4
8000	24	125	117	117	.4800328459202E+05	.2747565340159E-05	4
9000	22	135	126	140	.5400328459202E+05	.3966772426089E-05	4
10000	22	140	130	157	.6000328459202E+05	.2474245994089E-05	4
TOTAL	224	1217	1124	8.04(seconds)			

52 CG_DESCENT Algorithm. Function: VARDIM (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	36	73	38	6	.6782971189736E-28	.1332267629550E-14	0
2000	39	79	40	13	.3043785413390E-24	.4352074256531E-13	0
3000	41	84	43	21	.1774162104167E-24	.2753353101070E-13	0
4000	42	85	43	29	.4085310935397E-23	.1110223024625E-12	0
5000	43	87	44	36	.1150505300208E-23	.5306866057708E-13	0
6000	45	196	151	69	.2913238671078E-27	.1554312234475E-14	4
7000	47	188	143	81	.3619638959800E-27	.1776356839400E-14	4
8000	45	91	46	61	.5283369005165E-23	.8992806499464E-13	0
9000	46	93	47	70	.1696922218443E-23	.4840572387366E-13	0
10000	46	93	47	78	.9950541944664E-24	.3552713678801E-13	0

TOTAL 430 1069 642 4.64(seconds)

53 CG_DESCENT Algorithm. Function: STAIRCASE S1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	1999	3999	2000	284	.3421862823656E-17	.3758486855077E-09	0
2000	3962	7925	3963	1129	.1322624943033E-10	.7859016477596E-06	0
3000	5920	11841	5921	2530	.5847320852961E-10	.9491932360106E-06	0
4000	7891	15783	7892	4498	.1041197243185E-09	.9861259968602E-06	0
5000	9866	19733	9867	7033	.1400406134246E-09	.9730410965858E-06	0
6000	11528	23057	11529	9856	.9409743030879E-09	.9997274901252E-06	0
7000	13554	27109	13555	13628	.9136015174444E-09	.9965388017008E-06	0
8000	15572	31145	15573	17744	.9480294931251E-09	.9923751349561E-06	0
9000	17703	35407	17704	22690	.4376880247048E-09	.9933501132764E-06	0
10000	19653	39307	19654	27995	.5200907527058E-09	.9926479833666E-06	0

TOTAL 107648 215306 107658 1073.87(seconds)

54 CG_DESCENT Algorithm. Function: LIARWHD (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	21	44	27	5	.9044779094217E-15	.2290425906167E-06	0
2000	22	47	31	8	.3381922351328E-19	.3311259710869E-08	0
3000	26	55	35	16	.6218747726353E-14	.3276798118620E-06	0
4000	26	57	37	21	.5891058084154E-17	.5839439958244E-06	0
5000	22	48	31	22	.1765936633530E-15	.7573103055750E-06	0
6000	24	54	36	30	.6391390569452E-16	.4878373345279E-06	0
7000	21	48	33	30	.2339388708108E-24	.1154631945610E-12	0
8000	20	43	28	32	.2160931822733E-16	.5471064419281E-06	0
9000	22	53	36	42	.1505551090711E-17	.6559732712573E-07	0
10000	22	50	35	46	.1265368916113E-18	.1884701150701E-07	0

TOTAL 226 499 329 2.52(seconds)

55 CG_DESCENT Algorithm. Function: Diagonal 6

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	4	9	5	1	.2378097718747E-09	.6898413869775E-06	0
2000	4	9	5	1	.4756195437494E-09	.6898368805399E-06	0
3000	4	9	5	2	.7140954494389E-09	.6898359132006E-06	0
4000	4	9	5	2	.9521272659185E-09	.6898424839252E-06	0
5000	4	9	5	3	.1189048859374E-08	.6898409653473E-06	0
6000	4	9	5	3	.1426858631248E-08	.6898346185703E-06	0
7000	4	9	5	4	.1666222715357E-08	.6898534504864E-06	0
8000	4	9	5	4	.1904254531837E-08	.6898364030550E-06	0
9000	4	9	5	5	.2142286348317E-08	.6898410982363E-06	0
10000	4	9	5	6	.2380318164796E-08	.6898364217694E-06	0

TOTAL 40 90 50 .31(seconds)

56 CG_DESCENT Algorithm. Function: DIXON3DQ (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	1000	2001	1002	119	.9990009990010E-03	.1001065896844E-10	0
2000	2000	4001	2002	478	.4997501249375E-03	.5218492304948E-11	0
3000	3000	6001	3002	1074	.3332222592469E-03	.6417977260753E-11	0
4000	4000	8001	4002	1911	.2499375156211E-03	.5020872606565E-11	0
5000	5000	10001	5002	2993	.1999600079984E-03	.7612133146040E-11	0
6000	6000	12001	6002	4295	.1666388935177E-03	.6996625501188E-11	0
7000	7000	14001	7002	5862	.1428367376089E-03	.8101519455295E-11	0
8000	8000	16001	8002	7647	.1249843769529E-03	.1050981524031E-10	0
9000	9000	18001	9002	9661	.1110987668037E-03	.1276312389109E-10	0
10000	10000	20001	10002	11968	.9999000099990E-04	.1042188557676E-10	0

TOTAL 55000 110010 55020 460.08(seconds)

57 CG_DESCENT Algorithm. Function: ENGVAL1 (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	26	48	32	2	.1108194718785E+04	.5875257094168E-06	0
2000	26	47	33	5	.2218313143943E+04	.5424826685640E-06	0
3000	27	49	36	8	.3328431569101E+04	.7436676403229E-06	0
4000	25	46	33	9	.4438549994258E+04	.7834068560224E-06	0
5000	26	146	136	15	.5548668419416E+04	.1210892262460E-05	4
6000	26	45	35	15	.6658786844573E+04	.8222899516852E-06	0
7000	26	46	36	17	.7768905269731E+04	.6679562620100E-06	0

8000	26	45	35	20	.8879023694889E+04	.4096541035281E-06	0
9000	23	138	127	25	.9989142120047E+04	.2267253305876E-05	4
10000	25	139	128	29	.1109926054521E+05	.1090127725867E-05	4

TOTAL 256 749 631 1.45(seconds)

58 CG_DESCENT Algorithm. Function: Extended DENSCHNA (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	11	23	12	3	.3852493439055E-10	.7233506879180E-06	0
2000	11	23	12	4	.7704986870373E-10	.7233506875749E-06	0
3000	11	23	12	7	.1155748016414E-09	.7233506830895E-06	0
4000	11	23	12	10	.1540997344142E-09	.7233506805976E-06	0
5000	11	23	12	11	.1926246666196E-09	.7233506779714E-06	0
6000	11	23	12	14	.2311495993661E-09	.7233506771159E-06	0
7000	11	23	12	17	.2696745229873E-09	.7233506640981E-06	0
8000	11	23	12	18	.3081994495833E-09	.7233506578517E-06	0
9000	11	23	12	21	.3467243750552E-09	.7233506518398E-06	0
10000	11	23	12	24	.3852493241320E-09	.7233506692830E-06	0

TOTAL 110 230 120 1.29(seconds)

59 CG_DESCENT Algorithm. Function: Extended DENSCHNC (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	12	28	17	4	.9653952793597E-14	.1118640032966E-07	0
2000	12	28	17	10	.1930795615588E-13	.1118642253412E-07	0
3000	12	28	17	15	.2896193082298E-13	.1118642431048E-07	0
4000	12	28	17	19	.3861591506365E-13	.1118641631687E-07	0
5000	12	28	17	25	.4826998344560E-13	.1118642431048E-07	0
6000	12	28	17	29	.5792398067765E-13	.1118644473858E-07	0
7000	12	28	17	34	.6757790372604E-13	.1118642519866E-07	0
8000	12	28	17	39	.7723189811225E-13	.1118642875137E-07	0
9000	12	28	17	44	.8688592630651E-13	.1118642164594E-07	0
10000	12	28	17	49	.9653962548149E-13	.1118640565873E-07	0

TOTAL 120 280 170 2.68(seconds)

60 CG_DESCENT Algorithm. Function: Extended DENSCHNB (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	7	15	8	2	.1250799366345E-09	.9544248149568E-06	0
2000	7	15	8	2	.2501597344430E-09	.9544245536103E-06	0
3000	7	15	8	5	.3752395467327E-09	.9544244863308E-06	0
4000	7	15	8	6	.5003193280492E-09	.9544244226040E-06	0
5000	7	15	8	7	.6253991503790E-09	.9544244152765E-06	0
6000	7	15	8	9	.7504798140790E-09	.9544249368592E-06	0
7000	7	15	8	10	.8755612747946E-09	.9544257373300E-06	0
8000	7	15	8	12	.1000642754121E-08	.9544263459542E-06	0
9000	7	15	8	13	.1125724155360E-08	.9544267849364E-06	0
10000	7	15	8	14	.1250805697438E-08	.9544271923882E-06	0

TOTAL 70 150 80 .80(seconds)

61 CG_DESCENT Algorithm. Function: Extended DENSCHNF (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	27	65	52	13	.1870918261757E-12	.2223372137356E-06	0
2000	29	69	54	26	.3372571281330E-12	.2059270798954E-06	0
3000	29	66	49	38	.7148734445824E-11	.9959137979091E-06	0
4000	29	67	54	54	.9910193124876E-11	.7950987152859E-06	0
5000	29	67	54	65	.8742415043409E-11	.6689036108888E-06	0
6000	21	50	36	56	.1121765111890E-10	.9525896402314E-06	0
7000	29	69	53	92	.1235887944540E-11	.2680430031456E-06	0
8000	29	67	51	103	.3898981380694E-11	.7690506309697E-06	0
9000	28	66	52	115	.1856914038949E-10	.6986891231330E-06	0
10000	28	66	52	128	.2033264701833E-10	.7454107327511E-06	0

TOTAL 278 652 507 6.90(seconds)

62 CG_DESCENT Algorithm. Function: SINQUAD (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	573	1268	774	199	.3601224724208E-06	.8477341592446E-06	0
2000	1394	2964	1739	932	.1131360843172E-06	.4264250631371E-06	0
3000	804	1855	1142	875	.6342227035771E-08	.7260109517582E-06	0

4000	2169	4513	2483	2805	.1536958820931E-05	.5924542391169E-06	0
5000	5389	11080	6071	8721	.2785768747471E-04	.4706948366389E-06	0
6000	1932	4075	2370	3802	.6335137802423E-05	.4344605460657E-06	0
7000	906	1999	1220	2191	.4719810923242E-05	.9856309297246E-06	0
8000	2623	5596	3337	7097	.4663643445183E-05	.7765059089191E-06	0
9000	2014	4319	2495	6041	.5071768993867E-04	.2435471668891E-06	0
10000	1301	3004	1942	4741	.6587888277546E-05	.7972390024953E-06	0

TOTAL	19105	40673	23573	374.04(seconds)			

63 CG_DESCENT Algorithm. Function: BIGGSB1 (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	500	1001	501	49	.1647104581374E-17	.5892659693529E-09	0
2000	1000	2001	1001	197	.3157243382500E-16	.2551182376465E-08	0
3000	1500	3001	1501	444	.1548440814513E-15	.5494958266183E-08	0
4000	2000	4001	2001	788	.6454416654527E-15	.6764141025073E-08	0
5000	2500	5001	2501	1237	.1147349413682E-14	.1425927176335E-07	0
6000	3000	6001	3001	1774	.2868097516327E-14	.1466987464838E-07	0
7000	3500	7001	3501	2422	.5596440766710E-14	.4630068950462E-07	0
8000	4000	8001	4001	3156	.8318189004691E-14	.4447640211680E-07	0
9000	4500	9001	4501	3990	.1462180916318E-13	.8884900903894E-07	0
10000	5000	10001	5001	4946	.2206458359592E-13	.9047613658275E-07	0

TOTAL	27500	55010	27510	190.03(seconds)			

64 CG_DESCENT Algorithm. Function: Extended Block-Diagonal BD2

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	11	23	12	3	.1074611476819E-11	.1684023278197E-06	0
2000	11	23	12	6	.2149179122961E-11	.1684002343829E-06	0
3000	11	23	12	10	.3223751671174E-11	.1683997298975E-06	0
4000	11	23	12	13	.4298420714866E-11	.1684015497753E-06	0
5000	11	23	12	15	.5373084681923E-11	.1684027479282E-06	0
6000	11	23	12	21	.6447686821956E-11	.1684025081200E-06	0
7000	11	23	12	22	.7522324767110E-11	.1684027310528E-06	0
8000	11	23	12	25	.8596970874445E-11	.1684031449440E-06	0
9000	11	23	12	29	.9671461854208E-11	.1684018908359E-06	0
10000	11	23	12	32	.1074626517327E-10	.1684034353783E-06	0

TOTAL	110	230	120	1.76(seconds)			

65 CG_DESCENT Algorithm. Function: Generalized quartic GQ1

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	13	27	14	2	.1238804323936E-13	.1112953675224E-06	0
2000	12	25	13	4	.1844583848041E-12	.8364285059939E-06	0
3000	11	23	12	6	.1173254161396E-12	.5341617108345E-06	0
4000	10	21	11	7	.4651737917049E-12	.6340353871667E-06	0
5000	10	21	11	8	.6885968086254E-14	.9286139448538E-07	0
6000	10	21	11	10	.1282920552471E-14	.6734574664110E-07	0
7000	10	21	11	12	.2392265560421E-13	.2702396533086E-06	0
8000	10	21	11	14	.6412887531773E-13	.4406274923729E-06	0
9000	10	21	11	15	.9635879543612E-13	.5542279287497E-06	0
10000	10	21	11	17	.1093116106267E-12	.6077473437551E-06	0

TOTAL	106	222	116	.95(seconds)			

66 CG_DESCENT Algorithm. Function: Diagonal 7

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
1000	4	13	11	1	-.8168486188980E+03	.1584472677507E-06	0
2000	4	13	11	1	-.1633697237796E+04	.1572198482513E-06	0
3000	4	13	11	2	-.2450545856694E+04	.1241428617682E-06	0
4000	4	13	11	3	-.3267394475592E+04	.1370230937603E-06	0
5000	4	13	11	4	-.4084243094490E+04	.1386743972986E-06	0
6000	4	13	11	4	-.4901091713387E+04	.1466507564274E-06	0
7000	4	13	11	5	-.5717940332285E+04	.1500183475223E-06	0
8000	4	13	11	6	-.6534788951183E+04	.1674500684778E-06	0
9000	4	13	11	6	-.7351637570086E+04	.1579132442586E-06	0
10000	4	13	11	7	-.8168486188979E+04	.7700126980481E-07	0

TOTAL	40	130	110	.39(seconds)			

67 CG_DESCENT Algorithm. Function: Diagonal 8

n	iter	nfunc	ngrad	time(c)	f	gnorm	s
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1000	4	9	5	1	-.4804530139182E+03	.4652480445344E-07	0
2000	4	9	5	1	-.9609060278364E+03	.2543705002189E-07	0
3000	4	9	5	2	-.1441359041754E+04	.3498818035297E-07	0
4000	4	9	5	3	-.1921812055673E+04	.2425559089136E-06	0
5000	4	9	5	3	-.2402265069591E+04	.7926582012985E-07	0
6000	4	9	5	3	-.2882718083509E+04	.2561969121295E-06	0
7000	4	9	5	5	-.3363171097428E+04	.3309804506024E-06	0
8000	4	9	5	5	-.3843624111346E+04	.7135741020292E-07	0
9000	4	9	5	5	-.4324077125265E+04	.2479383387488E-07	0
10000	4	9	5	6	-.4804530139181E+04	.5857449907332E-06	0
TOTAL	40	90	50		.34(seconds)		

68 CG_DESCENT Algorithm. Function: Full Hessian

n	iter	func	ngrad	time(c)	f	gnorm	s
1000	3	7	4	1	-.2499999374896E+00	.4701963561837E-06	0
2000	2	5	3	1	-.2499999843735E+00	.9447537533402E-06	0
3000	2	5	3	1	-.249999930551E+00	.4202851521251E-06	0
4000	2	5	3	1	-.249999960936E+00	.2365261125847E-06	0
5000	2	5	3	1	-.249999974999E+00	.1515017941101E-06	0
6000	2	5	3	2	-.249999982638E+00	.1052462657025E-06	0
7000	2	5	3	3	-.249999987245E+00	.7731332618555E-07	0
8000	2	5	3	2	-.249999990235E+00	.5923589829759E-07	0
9000	2	5	3	3	-.249999992283E+00	.4659754215819E-07	0
10000	2	5	3	3	-.249999993752E+00	.3767531986387E-07	0
TOTAL	21	52	31		.18(seconds)		

69 CG_DESCENT Algorithm. Function: SIN COS

n	iter	func	ngrad	time(c)	f	gnorm	s
1000	13	27	14	4	.3865995282465E+03	.3697579755713E-06	0
2000	12	25	13	7	.7731990564932E+03	.8965840933017E-06	0
3000	13	27	14	12	.1159798584740E+04	.9459382487309E-06	0
4000	12	25	13	14	.1546398112986E+04	.2494126366548E-06	0
5000	13	27	15	20	.1932997641232E+04	.3209273807814E-06	0
6000	13	26	15	23	.2319597169479E+04	.6464834295672E-07	0
7000	13	28	16	29	.2706196697725E+04	.2345301730600E-10	0
8000	13	27	15	31	.3092796225972E+04	.4473853272291E-06	0
9000	14	29	17	39	.3479395754218E+04	.4205513731703E-06	0
10000	15	31	19	46	.3865995282465E+04	.1833844721633E-06	0
TOTAL	131	272	151		2.25(seconds)		

70 CG_DESCENT Algorithm. Function: Generalized quartic GQ2

n	iter	func	ngrad	time(c)	f	gnorm	s
1000	32	66	34	6	.4718859438745E-12	.6845772903474E-06	0
2000	33	68	35	14	.2885052988383E-12	.9238023581665E-06	0
3000	34	70	36	20	.1785629134401E-12	.4973982404103E-06	0
4000	34	70	36	27	.2745979454423E-12	.6510017177256E-06	0
5000	34	70	36	34	.4538410266965E-12	.8773250464223E-06	0
6000	36	74	38	43	.1290081453144E-12	.5660467821792E-06	0
7000	36	74	38	52	.2202043168749E-12	.6855687845182E-06	0
8000	36	74	38	57	.3505768128304E-12	.8426758680058E-06	0
9000	37	76	39	67	.3529740250520E-12	.7889010751122E-06	0
10000	37	76	39	74	.4912545853158E-12	.9314619503071E-06	0
TOTAL	349	718	369		3.94(seconds)		

71 CG_DESCENT Algorithm. Function: EXTROSNB (CUTE)

n	iter	func	ngrad	time(c)	f	gnorm	s
1000	7253	14875	7708	1804	.3873920712745E-06	.8160099290109E-06	0
2000	8243	16749	8576	4071	.4483043235502E-06	.9518550685105E-06	0
3000	6161	12701	6652	4650	.4248795538718E-06	.9946191706532E-06	0
4000	6403	13054	6718	6392	.4633242309177E-06	.9965577925739E-06	0
5000	6753	13929	7289	8489	.3863624487820E-06	.9864849950921E-06	0
6000	6044	12386	6426	9036	.4191462450382E-06	.9228269022600E-06	0
7000	11170	22510	11404	19250	.3458759251768E-06	.9979950606430E-06	0
8000	8027	16301	8343	16048	.4053852801520E-06	.9834010452947E-06	0
9000	6050	12414	6462	13685	.3958678058961E-06	.8127520560210E-06	0
10000	6045	12444	6486	15148	.4659595713003E-06	.8150840560580E-06	0
TOTAL	72149	147363	76064		985.73(seconds)		

72 CG_DESCENT Algorithm. Function: ARGLINB (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s	
1000	3	13	12	0	.2000000000000E+00	.8526512829121E-10	0	
2000	2	5	3	1	.2000000000000E+00	.8169749889930E-06	0	
3000	3	95	93	3	.2000000000000E+00	.8675669960212E-08	4	
4000	3	61	59	2	.2000000000000E+00	.3248624125263E-07	4	
5000	3	8	6	2	.2000000000000E+00	.1558928488521E-06	0	
6000	3	100	98	6	.2000000000000E+00	.4058620106662E-07	4	
7000	3	14	12	3	.2000000000000E+00	.2427259460092E-07	0	
8000	3	99	97	8	.2000000000000E+00	.4915818863083E-06	4	
9000	4	62	60	8	.2000000000000E+00	.1053876985679E-06	4	
10000	3	102	100	11	.2000000000000E+00	.1995204002014E-06	4	
TOTAL				30	559	540	.44(seconds)	

73 CG_DESCENT Algorithm. Function: FLETCHCR (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s	
1000	21	46	26	3	.2674841017368E-15	.5272347890751E-06	0	
2000	21	46	26	6	.7273604269655E-15	.7857873238851E-06	0	
3000	21	46	26	9	.6649409169471E-15	.8479838606754E-06	0	
4000	21	46	26	13	.5116206318547E-15	.6574346399127E-06	0	
5000	21	46	26	15	.4133063769623E-15	.6858254850679E-06	0	
6000	21	46	26	19	.3774694934042E-15	.7758129469594E-06	0	
7000	21	46	26	22	.3661140667841E-15	.8119100278262E-06	0	
8000	21	46	26	25	.3654554416297E-15	.8181034957842E-06	0	
9000	21	46	26	28	.3696008208313E-15	.8053548270007E-06	0	
10000	21	46	26	32	.3749484863170E-15	.7706939084341E-06	0	
TOTAL				210	460	260	1.72(seconds)	

74 CG_DESCENT Algorithm. Function: Extended Himmelblau HIMMELBG (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s	
1000	1	109	109	16	.0000000000000E+00	.0000000000000E+00	4	
2000	1	109	109	34	.0000000000000E+00	.0000000000000E+00	4	
3000	1	109	109	51	.0000000000000E+00	.0000000000000E+00	4	
4000	1	109	109	68	.0000000000000E+00	.0000000000000E+00	4	
5000	1	109	109	85	.0000000000000E+00	.0000000000000E+00	4	
6000	1	109	109	102	.0000000000000E+00	.0000000000000E+00	4	
7000	1	109	109	120	.0000000000000E+00	.0000000000000E+00	4	
8000	1	109	109	136	.0000000000000E+00	.0000000000000E+00	4	
9000	1	109	109	153	.0000000000000E+00	.0000000000000E+00	4	
10000	1	109	109	170	.0000000000000E+00	.0000000000000E+00	4	
TOTAL				10	1090	1090	9.35(seconds)	

75 CG_DESCENT Algorithm. Function: Extended Himmelblau HIMMELBH (CUTE)

n	iter	nfunc	ngrad	time(c)	f	gnorm	s	
1000	8	19	11	2	-.5000000000000E+03	.3443258767000E-07	0	
2000	8	19	11	2	-.1000000000000E+04	.2364177749126E-06	0	
3000	8	19	11	4	-.1500000000000E+04	.3249668689698E-07	0	
4000	8	19	11	5	-.2000000000000E+04	.1736978954003E-06	0	
5000	8	19	11	6	-.2500000000000E+04	.6998928392399E-07	0	
6000	8	19	11	8	-.3000000000000E+04	.3265505466032E-07	0	
7000	8	19	11	9	-.3500000000000E+04	.1314629822780E-06	0	
8000	8	19	11	10	-.4000000000000E+04	.9767900088775E-07	0	
9000	8	19	11	11	-.4500000000000E+04	.3128321779400E-07	0	
10000	8	19	11	13	-.5000000000000E+04	.2407439323449E-06	0	
TOTAL				80	190	110	.70(seconds)	

May 3, 2006