CG with Powell restart. April 12, 2006

1 CG Algorithm:Extended Freudenstein & Roth Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	15	9	32	15	9	.2449212683962E+05	.1525267515042E-04
2000	16	10	35	16	21	.4898425367924E+05	.5880478790258E-07
3000	14	9	31	14	8	.7347638051886E+05	.1575431797214E-04
4000	20	12	45	20	16	.9796850735848E+05	.4166214271591E-04
5000	18	10	39	18	17	.1224606341981E+06	.6235722368818E-06
6000	15	9	41	15	21	.1469527610377E+06	.1825044144994E-05
7000	15	9	41	15	25	.1714448878773E+06	.6768772986904E-06
8000	15	9	41	15	27	.1959370147169E+06	.2927839912394E-06
9000	17	11	44	17	33	.2204291415566E+06	.3098653734320E-04
10000	15	9	41	15	34	.2449212683962E+06	.6203385906270E-06
TOTAL	160	97	390	160	2.11 (seconds)	proc= 60.63%	

2 CG Algorithm:Extended Trigonometric Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	29	19	51	17	8	.1660874484367E-09	.7976969020227E-05
2000	37	25	62	21	20	.1258799454761E-09	.5300035935160E-05
3000	29	19	53	20	27	.4697329996719E-12	.1267019126317E-05
4000	30	22	55	21	35	.3673025320926E-11	.2459368040480E-05
5000	30	23	55	21	44	.6850670355241E-12	.1397106881166E-05
6000	34	24	56	19	55	.3099589638207E-08	.5566257358177E-05
7000	29	21	52	20	58	.7131800181632E-09	.1693382724580E-04
8000	35	23	61	23	80	.1573999903158E-11	.9159532472551E-06
9000	38	27	69	27	99	.9855524196840E-12	.1753878734512E-05
10000	35	26	60	22	98	.7555319146435E-13	.4669412103211E-06
TOTAL	326	229	574	211	5.24 (seconds)	proc= 70.25%	

3 CG Algorithm:Extended Rosenbrock Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	39	21	84	34	9	.7630181842169E-14	.3909442844482E-05
2000	40	20	86	34	19	.1466172820809E-11	.1082546326379E-05
3000	35	19	75	27	25	.2063468445585E-08	.4060513163737E-04
4000	34	19	80	28	34	.2695084041699E-19	.9478229811814E-09
5000	37	17	89	32	47	.2523658826494E-13	.1419753882623E-06
6000	34	16	77	28	50	.3235371676277E-16	.5083467177751E-08
7000	40	20	88	33	67	.4330670692988E-13	.1859844681173E-06
8000	40	21	92	35	80	.2770618516149E-19	.1488091164027E-09
9000	31	16	72	24	69	.1567433678570E-14	.1452556296122E-05
10000	32	18	75	26	81	.3036965580225E-10	.4944712054860E-05
TOTAL	362	187	818	301	4.81 (seconds)	proc= 51.66%	

4 CG Algorithm:Extended White & Holst Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	34	19	74	29	8	.2484935544827E-11	.9970425140239E-06
2000	30	16	60	23	13	.2997090827987E-12	.9374521160759E-05
3000	32	15	67	25	22	.2182439992715E-08	.3080150286160E-04
4000	33	17	73	28	32	.3678311420128E-10	.3834065219771E-05
5000	35	18	75	29	41	.1201732661926E-08	.2327490785556E-04
6000	34	18	73	28	49	.6964826404769E-09	.4507026448488E-04
7000	35	18	75	29	58	.3310876838224E-08	.3818750908181E-04
8000	35	18	75	29	66	.3184727790736E-08	.3754717015559E-04
9000	35	18	75	29	74	.3462510491453E-08	.3917125596378E-04
10000	34	18	73	28	80	.1874799169151E-08	.7874161607185E-04
TOTAL	337	175	720	277	4.43 (seconds)	proc= 51.93%	

5 CG Algorithm:Extended Beale Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	12	7	25	11	2	.1935887822677E-09	.1080431361028E-04
2000	12	8	25	11	4	.1234094049495E-08	.2727946300957E-04
3000	14	9	28	12	6	.1470141762258E-09	.1740175786441E-04
4000	14	9	28	12	9	.2277413655306E-09	.2260169445465E-04
5000	14	9	28	12	11	.3136144303945E-09	.2738023013161E-04
6000	14	9	28	12	13	.4025569201445E-09	.3180231325921E-04
7000	14	9	28	12	15	.4941956793268E-09	.3595050979923E-04
8000	14	9	28	12	19	.5873949632748E-09	.3985210043369E-04
9000	14	9	28	12	19	.6821645509440E-09	.4355540232185E-04
10000	14	9	28	12	22	.7787525232808E-09	.4710118115851E-04
TOTAL	136	87	274	118	1.20 (seconds)	proc= 63.97%	

6 CG Algorithm:Extended Penalty Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	19	11	43	12	4	.8831940750670E+03	.1257962814258E-04
2000	9	5	31	9	5	.1814063664869E+04	.1685439690093E-05
3000	10	7	33	9	9	.2755973749503E+04	.2038585571884E-05
4000	20	17	44	17	17	.3704070534948E+04	.8215593388822E-06
5000	10	7	34	9	14	.4656333923744E+04	.5019815003013E-05
6000	17	14	45	17	25	.5611676659140E+04	.8844882270500E-06
7000	19	17	49	18	31	.6569428560737E+04	.7826559171293E-07
8000	9	6	34	9	22	.7529139638522E+04	.3994225036997E-06
9000	18	14	48	16	40	.8490489281459E+04	.1655269384699E-05
10000	84	81	2390	83	1447	.9453238852842E+04	.9981713056625E-06
TOTAL	215	179	2751	199	16.14 (seconds)	proc= 83.26%	

7 CG Algorithm:Perturbed Quadratic Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	334	102	517	182	47	.1881134421145E-12	.3044854239316E-05
2000	439	138	693	253	122	.2810075711400E-12	.3368837878708E-05
3000	504	150	808	303	216	.4933637317872E-13	.3562749032896E-05
4000	803	236	1285	481	453	.1279375590236E-12	.3045190627338E-05
5000	889	265	1411	521	625	.3862551940168E-13	.5337043385407E-05
6000	783	248	1238	454	656	.2405338603545E-12	.2841007607166E-05
7000	1034	320	1643	608	1017	.1345577609966E-12	.4976743303984E-05
8000	967	285	1539	571	1088	.1281844865042E-12	.5142874066072E-05
9000	1141	337	1817	675	1444	.4490280812468E-14	.3562029043801E-05
10000	1135	343	1801	665	1594	.2041473037925E-12	.6699657645691E-05
TOTAL	8029	2424	12752	4713	72.62 (seconds)	proc= 30.19%	

8 CG Algorithm:Raydan 1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1861	2126	122	227	.5005000000001E+05	.4173200715126E-03
2000	2001	1829	2155	153	460	.2001000000018E+06	.3674971320346E-02
3000	2001	1755	2238	233	694	.4501500000005E+06	.2812185904639E-02
4000	1384	957	2204	584	661	.8002000000000E+06	.1002642462136E-05
5000	2001	1608	2643	510	1027	.1250250000000E+07	.1158385020039E-04
6000	2001	1655	2309	303	1424	.1800300000007E+07	.9250529136682E-02
7000	2001	1684	2297	289	1644	.2450350000014E+07	.1747096970152E-01
8000	2001	1619	2427	405	1766	.3200400000000E+07	.2401231871786E-02
9000	2001	1685	2282	275	2118	.4050450000079E+07	.3529052087384E-01
10000	2001	1786	2179	176	2313	.5000500000164E+07	.7917557607150E-01
TOTAL	19393	16439	22860	3050	123.34 (seconds)	proc= 84.77%	

9 CG Algorithm:Raydan 2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	4	4	9	4	1	.1000000000000E+04	.1635064765115E-06
2000	4	4	9	4	1	.2000000000000E+04	.2278906631831E-06
3000	4	4	9	4	2	.3000000000000E+04	.2772825628631E-06
4000	4	4	9	4	3	.4000000000000E+04	.3189153148706E-06
5000	4	4	9	4	3	.5000000000000E+04	.3555877116125E-06
6000	4	4	9	4	4	.6000000000000E+04	.3887512483346E-06
7000	4	4	9	4	4	.7000000000000E+04	.4192396809906E-06
8000	4	4	9	4	6	.8000000000000E+04	.4476367480985E-06
9000	4	4	9	4	6	.9000000000000E+04	.4742706205552E-06
10000	4	4	9	4	7	.1000000000000E+05	.4994223985213E-06
TOTAL	40	40	90	40	.37 (seconds)	proc= *****%	

10 CG Algorithm:Diagonal 1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1860	57822	1914	2344	-.2706832341531E+07	.8215238289506E-04
2000	2001	1840	2149	140	466	-.1220840670370E+08	.7998718689503E-01
3000	2001	1808	55587	1896	6713	-.2928916452173E+08	.1391446793887E-02
4000	2001	1743	52246	1846	8584	-.5436698616002E+08	.1020244874830E-02
5000	2001	1837	2152	144	1163	-.8773370882762E+08	.1293372367403E+01
6000	2001	1727	52612	1847	12768	-.1296143649857E+09	.3362400014036E-02
7000	2001	1790	2203	194	1655	-.1801922917987E+09	.1024473821156E+01
8000	2001	1802	2199	190	1891	-.2396222480316E+09	.3000535292191E+01
9000	2001	1820	2154	144	2101	-.3080381575476E+09	.3601983357326E+01
10000	2001	1780	2220	210	2367	-.3855580713082E+09	.3081730106617E+01
TOTAL	20010	18007	231344	8525	400.52 (seconds)	proc= 89.99%	

11 CG Algorithm:Diagonal 2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	177	55	299	114	29	.3127464989805E+02	.1349768139802E-05
2000	2001	1831	2170	161	492	.3699431144964E+02	.8599289372363E-05
3000	256	76	444	172	128	.4056322919250E+02	.2710072360124E-05
4000	345	125	572	211	224	.4319524089292E+02	.4126709605690E-05
5000	2001	1763	2236	220	1256	.4529383464077E+02	.2605693881280E-04
6000	521	174	859	327	507	.4704550126990E+02	.1331683206154E-05
7000	431	137	719	265	492	.4855246482660E+02	.1596268258844E-05
8000	548	174	896	330	705	.4987707417667E+02	.1649505700924E-05
9000	500	168	820	309	725	.5106027015102E+02	.1647070074520E-05
10000	540	179	912	342	884	.5213043560851E+02	.2540679699786E-05
TOTAL	7320	4682	9927	2451	54.42 (seconds)	proc= 63.96%	

12 CG Algorithm:Diagonal 3 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1876	2108	107	273	-.4957524745489E+06	.3569425318174E-01
2000	2001	1782	54781	1877	6728	-.1991449986573E+07	.1048142633260E-03
3000	2001	1804	2178	177	840	-.4487144190229E+07	.2480279031780E+00
4000	2001	1790	55309	1877	13612	-.7982837036444E+07	.6802349617318E-03
5000	2001	1841	2136	134	1383	-.1247852913644E+08	.4589164563368E+00
6000	2001	1813	2174	170	1680	-.1797422076698E+08	.1990467274691E+00
7000	2001	1850	2129	127	1935	-.2446991205501E+08	.1679787259011E+01
8000	2001	1849	2129	126	2210	-.3196560312694E+08	.1476813648464E+01
9000	2001	1865	2124	120	2479	-.4046129400883E+08	.2089489876290E+01
10000	2001	1795	2208	204	2822	-.4995698476102E+08	.1138834037824E+01
TOTAL	20010	18265	127276	4919	339.62 (seconds)	proc= 91.28%	

13 CG Algorithm:Hager Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	222	194	5748	206	330	-.4474419132154E+05	.1158984243011E-05
2000	468	431	13235	441	1475	-.1471735005125E+06	.9991358438665E-06
3000	743	706	22299	717	3783	-.2925501003138E+06	.1061050691466E-05
4000	1574	1536	49455	1546	11231	-.4746425076978E+06	.2148493970784E-05
5000	1732	1691	54507	1704	15439	-.6896067628040E+06	.2006938035877E-05
6000	1775	1738	56490	1756	18927	-.9347349321991E+06	.1217775405862E-05
7000	2001	1960	63818	1978	24846	-.1207973806382E+07	.3009545484138E-05
8000	2001	1969	2031	29	2041	-.1507691037211E+07	.1959581750720E-01
9000	2001	1952	63661	1966	31949	-.1832544956898E+07	.2931495237922E-04
10000	2001	1959	64507	1975	36131	-.2181405217178E+07	.1441280610718E-04
TOTAL	14518	14136	395751	12318	1461.52 (seconds)	proc= 97.37%	

14 CG Algorithm:Generalized Tridiagonal 1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	45	32	601	36	58	.9972103074860E+03	.1182587687018E-05
2000	21	3	45	19	12	.1997210307486E+04	.1891974618790E-05
3000	26	11	182	25	56	.2997210307486E+04	.2121636433554E-05
4000	41	27	462	31	177	.3997210307486E+04	.7398826684272E-06
5000	36	20	452	35	215	.4997210307486E+04	.1976076311515E-05
6000	23	9	48	19	38	.5997210307486E+04	.2259030321042E-05
7000	34	20	417	29	280	.6997210307486E+04	.1984534967398E-05
8000	23	3	52	22	53	.7997210307486E+04	.2389773204693E-05
9000	83	69	1911	79	1581	.8997210307486E+04	.1483528162718E-05
10000	21	7	48	20	61	.9997210307486E+04	.2760534392835E-05
TOTAL	353	201	4218	315	25.31 (seconds)	proc= 56.94%	

15 CG Algorithm:Extended Tridiagonal 1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	11	6	22	10	2	.1168194263149E-07	.3825034173128E-05
2000	10	5	21	10	5	.2510580256597E-07	.2006484210161E-05
3000	10	5	21	10	6	.5135880073370E-07	.3101712357340E-05
4000	10	5	21	10	8	.7957951866114E-07	.4009610252509E-05
5000	10	5	21	10	11	.1089900677570E-06	.4802430194697E-05
6000	10	5	21	10	12	.1392276177570E-06	.5516211281331E-05
7000	10	5	21	10	15	.1700847100141E-06	.6172196643918E-05
8000	10	5	21	10	16	.2014288002384E-06	.6784705433052E-05
9000	9	5	19	9	17	.2338606480226E-06	.7402506720552E-04
10000	9	5	19	9	18	.2657550676067E-06	.6374486445400E-04
TOTAL	99	51	207	98	1.10 (seconds)	proc= 51.52%	

16 CG Algorithm:Extended Three Expo Terms Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	16	8	25	8	3	.1279633348329E+04	.7918147113527E-05
2000	14	7	22	7	6	.2559266696658E+04	.3697463734585E-04
3000	14	7	22	7	8	.3838900044987E+04	.1484933762536E-04
4000	12	6	19	6	9	.5118533393317E+04	.1463560669317E-04
5000	12	6	19	6	12	.6398166741646E+04	.3512258320815E-04
6000	12	6	19	6	14	.7677800089975E+04	.3330254408837E-04
7000	13	7	21	7	18	.8957433438304E+04	.2993563444971E-04
8000	12	6	19	6	19	.1023706678663E+05	.6702554088545E-04
9000	12	6	19	6	22	.1151670013496E+05	.5380302520436E-04
10000	12	6	19	6	24	.1279633348329E+05	.3671504345716E-04
TOTAL	129	65	204	65	1.35 (seconds)	proc= 50.39%	

17 CG Algorithm:Generalized Tridiagonal 2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	53	17	89	34	15	.2221804172145E+01	.2991622213029E-05
2000	55	20	88	30	30	.9584127765254E+00	.2710758070347E-05
3000	51	18	85	31	43	.9584127765254E+00	.3189281541174E-05
4000	64	27	103	36	70	.9584127765254E+00	.1781355328348E-05
5000	60	22	96	33	83	.9584127765254E+00	.1003071648146E-05
6000	68	28	107	36	110	.9584127765254E+00	.2534411202209E-05
7000	58	19	93	32	111	.9584127765254E+00	.2377813198549E-05
8000	61	24	97	33	133	.9584127765254E+00	.2149490632257E-05
9000	57	18	95	35	146	.2852933237635E+01	.2590576645617E-05
10000	58	24	95	34	161	.2852933237635E+01	.2600617462127E-05
TOTAL	585	217	948	334	9.02 (seconds)	proc= 37.09%	

18 CG Algorithm:Diagonal 4 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	4	2	8	3	0	.9884954697143E-28	.1951893848974E-13
2000	4	2	8	3	2	.3586560042343E-27	.3074377104052E-13
3000	4	2	8	3	2	.3047683020601E-27	.6445319313336E-13
4000	4	2	8	3	2	.1028677494127E-27	.4044035225961E-13
5000	4	2	8	3	3	.4504512949039E-27	.3578515219055E-13
6000	4	2	8	3	4	.1919185717006E-26	.1414711280825E-12
7000	4	2	8	3	4	.1363991390297E-27	.4800427049700E-13
8000	4	2	8	3	5	.1948774046097E-25	.3602967522474E-12
9000	4	2	8	3	6	.2946487986522E-25	.2580332641510E-12
10000	4	2	8	3	6	.3429055776748E-25	.3334016604922E-12
TOTAL	40	20	80	30	.34 (seconds)	proc= 50.00%	

19 CG Algorithm:Diagonal 5 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	4	4	9	4	1	.6931471805599E+03	.8715763399223E-10
2000	4	4	9	4	3	.1386294361120E+04	.1502777612223E-09
3000	4	4	9	4	4	.2079441541680E+04	.1994239031659E-09
4000	4	4	9	4	5	.2772588722240E+04	.2412407846918E-09
5000	4	4	9	4	7	.3465735902800E+04	.2770878088301E-09
6000	4	4	9	4	8	.4158883083360E+04	.3079224421546E-09
7000	4	4	9	4	10	.4852030263920E+04	.3435492289045E-09
8000	4	4	9	4	11	.5545177444480E+04	.3732584261152E-09
9000	4	4	9	4	13	.6238324625040E+04	.4041004122097E-09
10000	4	4	9	4	13	.6931471805601E+04	.4277561486445E-09
TOTAL	40	40	90	40	.75 (seconds)	proc= *****%	

20 CG Algorithm:Extended Himmelblau Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	10	6	19	8	2	.2188674176065E-13	.1438517239686E-05
2000	10	6	19	8	3	.5962843500534E-13	.2356209557707E-05
3000	10	6	19	8	4	.1020906568849E-12	.3072738597147E-05
4000	10	6	19	8	6	.1470875088539E-12	.3680957445673E-05
5000	19	10	31	11	12	.2757034410925E-10	.4484350241460E-04
6000	19	10	31	11	15	.3182199627585E-10	.4823715638514E-04
7000	19	10	31	11	18	.3603850832643E-10	.5138358154199E-04
8000	19	10	31	11	21	.4023801027525E-10	.5433727272036E-04
9000	19	10	31	11	23	.4441404986249E-10	.5712432394891E-04
10000	19	10	31	11	25	.4856768196938E-10	.5976868995643E-04
TOTAL	154	84	262	98	1.29 (seconds)	proc= 54.55%	

21 CG Algorithm:Generalized PSC1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1954	2055	51	683	.9987220427508E+03	.1947304244067E-03
2000	287	190	3749	231	2045	.1998722041868E+04	.1011691887964E-04
3000	471	284	4986	386	4351	.2998722041844E+04	.8793238018489E-05
4000	2001	1844	16973	681	18060	.3998722041713E+04	.4636026882047E-04
5000	2001	1907	2120	110	3703	.4998722044560E+04	.8266461499797E-03
6000	807	597	13879	724	22312	.5998722041701E+04	.5405524165461E-05
7000	2001	1843	7450	372	15109	.6998722043555E+04	.2031145871884E-02
8000	725	553	1797	266	4537	.7998722041729E+04	.5402999431526E-05
9000	500	382	9347	422	23517	.8998722042840E+04	.1678345731870E-04
10000	2001	1883	2193	138	7490	.9998722056155E+04	.8341426784170E-03
TOTAL	12795	11437	64549	3381	1018.07 (seconds)	proc= 89.39%	

22 CG Algorithm:Extended PSC1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	6	5	13	6	3	.3865995282465E+03	.5099011441643E-05
2000	6	5	13	6	5	.7731990564929E+03	.7888043828141E-05
3000	6	5	13	6	8	.1159798584739E+04	.2516688951112E-04
4000	7	5	15	7	12	.1546398112986E+04	.6609147740573E-06
5000	7	5	15	7	15	.1932997641232E+04	.7926933845687E-06
6000	7	5	15	7	19	.2319597169479E+04	.9182867490645E-06
7000	7	5	15	7	21	.2706196697725E+04	.1035596703525E-05
8000	7	5	15	7	24	.3092796225972E+04	.1112637587256E-05
9000	7	5	15	7	27	.3479395754218E+04	.1213443872231E-05
10000	7	5	15	7	32	.3865995282465E+04	.1265656030357E-05
TOTAL	67	50	144	67	1.66 (seconds)	proc= 74.63%	

23 CG Algorithm:Extended Powell Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	65	23	119	53	11	.1019352976874E-06	.1513242712582E-04
2000	73	25	136	62	24	.1979375460187E-06	.9685766922829E-05
3000	75	22	144	68	39	.1817211258266E-06	.8300453453723E-05
4000	73	22	141	67	51	.3002583538055E-06	.1810982584134E-04
5000	57	17	110	52	49	.1248637713965E-05	.3206531853431E-04
6000	60	20	113	52	62	.1182894948044E-05	.3115540895360E-04
7000	67	20	124	56	80	.8322917640465E-06	.4986167437338E-04
8000	65	22	122	56	88	.2216520960842E-05	.4589279436954E-04
9000	70	23	130	59	109	.2636111468779E-05	.4667436372866E-04
10000	56	19	105	48	95	.1468595196170E-05	.3500677929786E-04
TOTAL	661	213	1244	573	6.08 (seconds)	proc= 32.22%	

24 CG Algorithm:Extended Block-Diagonal BD1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	25	19	39	11	4	.3335333309281E-09	.2878658090646E-04
2000	55	55	87	29	18	.1619310423216E-09	.2481059723411E-04
3000	55	55	87	29	26	.2811909753719E-09	.3269436184314E-04
4000	55	55	87	29	36	.4072719920102E-09	.3934725652611E-04
5000	55	55	87	29	44	.5229147882544E-09	.4458488469615E-04
6000	55	55	87	29	52	.6282725217387E-09	.4887043679918E-04
7000	55	55	87	29	62	.7175576145343E-09	.5222766062403E-04
8000	55	55	87	29	70	.7642573304422E-09	.5390039956608E-04
9000	54	54	85	29	78	.1626090993699E-08	.7862210573234E-04
10000	44	41	75	27	73	.1086690525014E-08	.6427249089511E-04
TOTAL	508	499	808	270	4.63 (seconds)	proc= 98.23%	

25 CG Algorithm:Extended Maratos Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	66	31	151	64	10	-.5003121103484E+03	.1524219109890E-05
2000	64	29	149	62	21	-.1000624220697E+04	.1297841726565E-04
3000	70	32	162	68	33	-.1500936331045E+04	.1513674655340E-05
4000	66	31	155	63	43	-.2001248441393E+04	.1948563638180E-05
5000	64	28	147	61	51	-.2501560551742E+04	.1078186820796E-04
6000	66	33	154	62	63	-.3001872662090E+04	.6490211027086E-05
7000	68	32	153	63	75	-.3502184772439E+04	.9020171857248E-05
8000	73	35	164	68	92	-.4002496882787E+04	.2608795411898E-04
9000	72	33	164	68	102	-.4502808993135E+04	.4538917975881E-06
10000	71	34	161	67	113	-.5003121103484E+04	.2223813269595E-04
TOTAL	680	318	1560	646	6.03 (seconds)	proc= 46.76%	

26 CG Algorithm:Extended Cliff Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	29	26	63	10	4	.9989330691176E+02	.3818651456915E-05
2000	2001	1998	2027	6	416	.1997866140905E+03	.5746599918685E-02
3000	37	35	47	6	15	.2996799205166E+03	.2959226686660E-04
4000	2001	1998	2028	7	831	.3995732282068E+03	.8253549891525E-02
5000	17	14	33	8	13	.4994665371967E+03	.2450540429097E-04
6000	17	14	37	8	16	.5993598411753E+03	.5342814821933E-05
7000	16	14	37	7	19	.6992531478736E+03	.7565187238739E-06
8000	25	21	58	15	34	.7991464608784E+03	.3519277481689E-04
9000	22	17	42	11	30	.8990397615497E+03	.3778696239727E-04
10000	17	14	30	7	26	.9989331100212E+03	.9128088727084E-04
TOTAL	4182	4151	4402	85	14.04 (seconds)	proc= 99.26%	

27 CG Algorithm:Quadratic Diagonal Perturbed Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	163	32	282	118	24	.2177048296734E-10	.1686329842133E-05
2000	211	42	367	155	62	.2086584650551E-10	.4368048951115E-05
3000	259	52	454	194	116	.9333083206708E-11	.4894285010853E-05
4000	308	54	549	240	185	.1183792344091E-10	.7928982629367E-05
5000	318	58	565	246	237	.3516232673602E-10	.2329852576593E-04
6000	359	68	632	272	322	.2746112256031E-10	.1321754388712E-04
7000	371	71	654	282	386	.4371256955409E-10	.6063477963706E-04
8000	524	99	921	396	623	.1611423435098E-10	.9670242624234E-05
9000	491	96	859	367	656	.2624626103675E-10	.4986205754542E-05
10000	441	86	767	325	653	.3542171314814E-10	.2896232943413E-04
TOTAL	3445	658	6050	2595	32.64 (seconds)	proc= 19.10%	

28 CG Algorithm:Extended Wood Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	31	11	59	26	7	.5273946312275E-11	.1841905568536E-04
2000	25	9	49	22	13	.3467032947708E-13	.2538920338659E-06
3000	24	10	48	22	18	.1941960497653E-09	.1671918339263E-04
4000	28	10	54	24	28	.1552302759560E-13	.4393443132536E-05
5000	29	8	57	26	36	.3040375145171E-16	.2356117571598E-06
6000	26	9	50	22	38	.3108163031171E-14	.2463761365197E-05
7000	24	8	46	20	42	.2989199216721E-10	.4576377284979E-04
8000	29	11	54	23	56	.6527251125252E-11	.4939096811871E-04
9000	25	11	49	22	55	.1758023699675E-08	.5317519822080E-04
10000	29	12	55	24	71	.1462082557161E-09	.1453498135282E-04
TOTAL	270	99	521	231	3.64 (seconds)	proc= 36.67%	

29 CG Algorithm:Extended Hiebert Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	85	52	184	83	13	.3560340088339E-17	.1869566468961E-06
2000	85	52	179	83	28	.6182389578476E-17	.2536150850125E-06
3000	85	52	182	83	39	.6955187737388E-17	.2671064744388E-06
4000	85	52	177	83	52	.1356041874386E-17	.1187773003215E-06
5000	83	54	169	82	63	.2303353511936E-09	.2290584659655E-04
6000	85	52	176	83	78	.6791590333843E-16	.7407278512961E-06
7000	85	52	175	83	91	.1962236712981E-16	.4518274301348E-06
8000	85	52	176	83	105	.7507272327475E-17	.2794717960932E-06
9000	85	52	175	83	116	.3382703291450E-16	.5932378416197E-06
10000	85	52	180	83	132	.8423514971773E-16	.9361459579229E-06
TOTAL	848	522	1773	829	7.17 (seconds)	proc= 61.56%	

30 CG Algorithm:Quadratic QF1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	334	98	531	196	33	-.4999999999361E-03	.2332582369935E-05
2000	526	159	837	310	101	-.2499999998800E-03	.2402669988639E-05
3000	552	173	871	318	159	-.1666666664068E-03	.3472770087741E-05
4000	785	244	1247	461	302	-.1249999994830E-03	.3204101898874E-05
5000	753	223	1195	441	363	-.9999999997505E-04	.3978121138097E-05
6000	916	289	1437	520	528	-.8333333276330E-04	.6003792655755E-05
7000	977	300	1560	582	658	-.7142857139454E-04	.3980630861996E-05
8000	962	309	1525	562	740	-.6249999968777E-04	.4658198020373E-05
9000	1192	358	1892	699	1031	-.5555555542583E-04	.2465512165656E-05
10000	1117	329	1782	664	1074	-.4999999987297E-04	.8500333377645E-05
TOTAL	8114	2482	12877	4753	49.89 (seconds)	proc= 30.59%	

31 CG Algorithm:Extended Quadratic Penalty QP1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	9	7	23	9	2	.3990006250000E+04	.4092622648185E-06
2000	903	901	30003	902	2156	.7990003125000E+04	.5253488768579E-06
3000	8	6	22	8	5	.1199000208333E+05	.8935208763385E-06
4000	9	7	28	9	7	.1599000156250E+05	.1058856363206E-05
5000	25	24	472	23	90	.1999000125000E+05	.7500579233219E-06
6000	860	858	28523	860	6186	.2399000104167E+05	.9358443433036E-06
7000	32	30	566	32	153	.2799000089285E+05	.8433512505743E-06
8000	2001	1999	67067	2000	19407	.3199000078125E+05	.1224646091043E-04
9000	2001	1998	67007	2000	21779	.3599000069445E+05	.2869490113796E-05
10000	20	19	279	19	111	.3999000062499E+05	.5662834079142E-06
TOTAL	5868	5849	193990	5862	498.96 (seconds)	proc= 99.68%	

32 CG Algorithm:Extended Quadratic Penalty QP2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	36	19	87	33	9	.7139856180527E-16	.3191533509667E-06
2000	36	19	86	34	18	.3730214373775E-17	.7724624925554E-07
3000	43	22	104	40	34	.1185293160391E-15	.2177423432239E-07
4000	40	20	106	37	45	.2386232483086E-15	.3089487120358E-07
5000	38	20	99	36	53	.2201519717426E-11	.2967515027924E-05
6000	44	21	123	41	77	.2111511454388E-19	.2906208151094E-09
7000	43	22	99	39	76	.2576871670858E-15	.3210527623741E-07
8000	42	21	106	38	90	.2478357439393E-17	.3148559949925E-08
9000	42	21	110	38	104	.7109474332595E-17	.1066513354266E-06
10000	40	20	104	37	110	.4411288395189E-14	.1328350845105E-06
TOTAL	404	205	1024	373	6.16 (seconds)	proc= 50.74%	

33 CG Algorithm:Quadratic QF2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	363	114	571	207	79	-.1000124968766E+01	.1626010580663E-05
2000	2001	1610	2354	350	596	-.1000062492189E+01	.3208007904312E-04
3000	615	191	982	363	380	-.1000041663195E+01	.2047370225648E-05
4000	754	226	1192	435	623	-.1000031248047E+01	.2126207844735E-05
5000	2001	1408	2527	522	1531	-.1000024998748E+01	.3767474731378E-04
6000	2001	1445	2489	485	1871	-.1000020832463E+01	.3858066152915E-04
7000	2001	1340	2574	572	2234	-.1000017856503E+01	.3984124716327E-04
8000	1269	432	2030	747	1922	-.1000015624512E+01	.1095517888347E-05
9000	1233	376	1952	716	2215	-.1000013888503E+01	.6847086138614E-05
10000	2001	1362	2558	556	3227	-.1000012499686E+01	.4748159846597E-04
TOTAL	14239	8504	19229	4953	146.78 (seconds)	proc= 59.72%	

34 CG Algorithm:Extended EP1 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2	2	5	2	0	.7931762881473E+04	.5427376174645E-08
2000	3	3	6	2	1	.1586352576295E+05	.1185543339228E-08
3000	3	3	6	2	1	.2379528864442E+05	.2225548739908E-10
4000	3	3	6	2	2	.3172705152589E+05	.2620573871782E-10
5000	3	3	6	2	2	.3965881440736E+05	.1529755802112E-09
6000	3	3	6	2	2	.4759057728884E+05	.2073590669368E-09
7000	3	3	6	2	3	.5552234017031E+05	.1121914841985E-09
8000	2	2	4	1	2	.6345410305178E+05	.3908987923302E-04
9000	3	3	6	2	4	.7138586593325E+05	.2528642697408E-09
10000	4	4	7	2	5	.7931762881473E+05	.6092834570204E-10
TOTAL	29	29	58	19	.22 (seconds)	proc= *****%	

35 CG Algorithm:Extended Tridiagonal 2 Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	37	17	60	22	5	.3893393944764E+03	.3309646507653E-05
2000	41	21	79	28	14	.7790685180765E+03	.3895607102257E-05
3000	42	25	79	28	20	.1168797641676E+04	.4362786916534E-05
4000	36	23	66	22	23	.1558526765277E+04	.4158044213161E-05
5000	31	16	54	20	23	.1948255888877E+04	.4719059265390E-05
6000	35	19	65	24	34	.2337985012477E+04	.3686067353361E-05
7000	34	18	55	17	36	.2727714136076E+04	.3251143322398E-05
8000	37	19	64	22	45	.3117443259676E+04	.1570182827057E-05
9000	37	19	65	25	52	.3507172383276E+04	.3978811266793E-05
10000	37	21	78	24	62	.3896901506876E+04	.4959750944810E-05
TOTAL	367	198	665	232	3.14 (seconds)	proc= 53.95%	

36 CG Algorithm:BDQRTIC (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1872	50576	1909	9920	.3983817950577E+04	.1006708771375E-04
2000	2001	1850	51310	1962	20221	.7989427682541E+04	.6398637128585E-04
3000	2001	1881	52965	1956	31313	.1199503741451E+05	.3793265573418E-04
4000	2001	1881	51739	1969	40866	.1600064714647E+05	.1491024952822E-04
5000	2001	1864	50560	1961	49938	.2000625687844E+05	.7769959677543E-04
6000	2001	1877	45417	1701	53880	.2401186661040E+05	.2445445975005E-02
7000	2001	1882	51283	1935	70945	.2801747634237E+05	.1284244865457E-03
8000	2001	1847	48782	1880	77104	.3202308607433E+05	.2571093286548E-04
9000	2001	1906	3383	192	7341	.3602869580640E+05	.2873651920222E-02
10000	2001	1966	2079	56	5524	.4003430695390E+05	.2823354766360E+00
TOTAL	20010	18826	408094	15521	3670.52 (seconds)	proc= 94.08%	

37 CG Algorithm:TRIDIA (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	1258	384	1982	723	179	.5778101922918E-12	.8129183683301E-05
2000	2001	590	3199	1198	577	.1648193886326E-11	.8522163577070E-05
3000	1847	559	2967	1119	799	.4668384447111E-13	.7298929521155E-05
4000	1991	598	3163	1171	1146	.2047368514409E-12	.1036556580073E-04
5000	2001	612	3195	1194	1438	.1280711152166E-05	.5771701617396E-02
6000	2001	587	3218	1217	1728	.6689757100417E-08	.2210689043630E-03
7000	2001	609	3178	1177	2007	.5562767815456E-08	.4589718217447E-03
8000	2001	614	3183	1182	2293	.3712576694518E-09	.2596713637409E-03
9000	2001	592	3192	1191	2586	.1571995765265E-03	.8607732036221E-01
10000	2001	610	3182	1181	2864	.3462300775594E-04	.2631464921460E-01
TOTAL	19103	5755	30459	11353	156.17 (seconds)	proc= 30.13%	

38 CG Algorithm:ARWHEAD (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	5	4	10	4	2	.4723477468535E-12	.3004013162108E-05
2000	12	7	21	8	10	.0000000000000E+00	.2476997385238E-06
3000	10	6	21	9	13	.0000000000000E+00	.3510294237092E-08
4000	10	6	24	9	20	.0000000000000E+00	.3216588198333E-07
5000	6	4	14	5	16	.0000000000000E+00	.4359492256284E-06
6000	6	4	14	5	18	.0000000000000E+00	.3607663903848E-06
7000	10	6	22	9	33	.0000000000000E+00	.3293140044921E-06
8000	4	3	10	3	17	.0000000000000E+00	.1394711780412E-06
9000	4	3	10	3	19	.0000000000000E+00	.1232330036060E-06
10000	8	5	18	7	39	.0000000000000E+00	.8447341625902E-07
TOTAL	75	48	164	62	1.87 (seconds)	proc= 64.00%	

39 CG Algorithm:NONDIA (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	20	10	41	18	7	.7884619712256E-17	.4299470721724E-07
2000	9	6	19	7	5	.6311052902558E-24	.1596767162937E-10
3000	9	6	19	7	9	.1080275554908E-15	.7623271599306E-08
4000	7	4	14	5	9	.3564247416432E-09	.1199537516784E-04
5000	7	4	14	5	10	.1510907591081E-09	.6985914116912E-05
6000	7	4	14	5	13	.7374470401096E-10	.4455549787480E-05
7000	7	4	14	5	16	.5438300732218E-10	.3542515279786E-05
8000	7	4	14	5	17	.2368413247045E-10	.2186866509048E-05
9000	7	4	14	5	20	.1485902806899E-10	.1633134439358E-05
10000	7	4	14	5	22	.9788081956391E-11	.1257490479019E-05
TOTAL	87	50	177	67	1.28 (seconds)	proc= 57.47%	

40 CG Algorithm:NONDQUAR (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	1559	285	2919	1346	465	.4633225453780E-05	.3621377276312E-05
2000	1962	366	3697	1700	1181	.5902602618044E-05	.4110190608771E-05
3000	1916	352	3623	1666	1731	.5047741068941E-05	.3848492589291E-05
4000	1595	319	3015	1388	1925	.6543310390444E-05	.4951276718440E-05
5000	1569	314	2972	1362	2365	.7661713698751E-05	.5233971482757E-05
6000	1774	374	3350	1519	3210	.6120789159629E-05	.5132974698273E-05
7000	1668	342	3169	1443	3524	.6829425174224E-05	.5871758361451E-05
8000	2001	417	3795	1725	4829	.6654820553284E-05	.2411655883044E-04
9000	1981	415	3757	1708	5381	.6815481285501E-05	.4967800410245E-05
10000	2001	444	3794	1728	6052	.7038129306049E-05	.3711709693957E-04
TOTAL	18026	3628	34091	15585	306.63 (seconds)	proc= 20.13%	

41 CG Algorithm:DQDRTIC (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	7	1	15	7	1	.2890924304487E-14	.2361138106822E-06
2000	7	0	15	7	4	.1620995643401E-12	.1507676184599E-05
3000	10	0	21	10	8	.4596942565702E-18	.1921752230756E-07
4000	10	0	21	10	11	.9626468715502E-16	.2781283565297E-06
5000	10	0	21	10	13	.1694677128327E-16	.1166956716148E-06
6000	10	0	21	10	16	.1468138138041E-14	.1086210256880E-05
7000	10	0	21	10	18	.5648116610824E-15	.6737088644375E-06
8000	7	2	15	7	16	.1199943955601E-13	.2772045375075E-06
9000	6	2	13	6	15	.4392760375515E-16	.1174828635938E-06
10000	6	2	13	6	16	.5583459914411E-15	.4149366004537E-06
TOTAL	83	7	176	83	1.18 (seconds)	proc= 8.43%	

42 CG Algorithm:EG2 (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	2001	1898	61616	1990	2648	-.9989473932851E+03	.4992259581315E-04
2000	2001	1875	59765	1991	5154	-.1998947289934E+04	.2509264843092E-03
3000	2001	1841	58517	1981	7593	-.2998947372872E+04	.1815080742762E-03
4000	2001	1866	59692	1977	10330	-.3998946340625E+04	.3047017495631E-03
5000	2001	1901	61872	1996	13367	-.4998942304949E+04	.7862635860900E-03
6000	2001	1917	62667	1986	16180	-.5998942750349E+04	.1114161137994E-02
7000	2001	1884	60494	1990	18329	-.6998945526149E+04	.3039584344836E-03
8000	2001	1859	59547	1989	20808	-.7998945228601E+04	.3994661921673E-03
9000	2001	1834	57521	1984	22481	-.8998946949259E+04	.3064152468086E-03
10000	2001	1889	61017	1990	26309	-.9998938546744E+04	.1187388946657E-02
TOTAL	20010	18764	602708	19874	1431.99 (seconds)	proc= 93.77%	

43 CG Algorithm:DIXMAANA (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	6	4	12	5	4	.1000000000000E+01	.1117490072651E-05
2000	6	3	12	5	7	.1000000000003E+01	.3449010628757E-05
3000	6	3	12	5	10	.1000000000003E+01	.3292135710279E-05
4000	6	3	12	5	14	.1000000000005E+01	.4490920600920E-05
5000	6	4	12	5	17	.1000000000007E+01	.5230582332359E-05
6000	6	3	12	5	21	.1000000000006E+01	.5026831148478E-05
7000	6	3	12	5	24	.1000000000010E+01	.6142433710467E-05
8000	6	4	12	5	28	.1000000000011E+01	.6665953313602E-05
9000	6	3	12	5	31	.1000000000010E+01	.6339490265340E-05
10000	6	3	12	5	34	.1000000000013E+01	.7366583405986E-05
TOTAL	60	33	120	50	1.90 (seconds)	proc= 55.00%	

44 CG Algorithm:DIXMAANB (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	10	10	17	6	5	.1000000000000E+01	.1258664703292E-05
2000	11	11	19	7	11	.1000000000000E+01	.4260436930331E-06
3000	11	10	19	7	17	.1000000000000E+01	.1612844190273E-06
4000	11	11	19	7	22	.1000000000000E+01	.8273191564646E-06
5000	11	11	19	7	28	.1000000000000E+01	.1267939023588E-05
6000	11	10	19	7	34	.1000000000001E+01	.1532546152421E-05
7000	11	11	19	7	39	.1000000000001E+01	.1883698517078E-05
8000	11	10	19	7	45	.1000000000001E+01	.2153442872389E-05
9000	11	10	19	7	50	.1000000000001E+01	.2331971344895E-05
10000	11	9	19	7	56	.1000000000000E+01	.1537999122380E-05
TOTAL	109	103	188	69	3.07 (seconds)	proc= 94.50%	

45 CG Algorithm:DIXMAANC (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	14	14	25	10	7	.1000000000000E+01	.4095121831864E-06
2000	15	14	26	10	16	.1000000000000E+01	.7192638470232E-07
3000	15	13	26	10	23	.1000000000000E+01	.1430188478119E-06
4000	14	13	24	9	28	.1000000000007E+01	.5407285022273E-05
5000	14	13	24	9	35	.1000000000005E+01	.4683193620006E-05
6000	14	13	24	9	42	.1000000000005E+01	.4496101974298E-05
7000	15	15	26	10	53	.1000000000000E+01	.1846653061066E-06
8000	14	12	24	9	56	.1000000000000E+01	.7587335522286E-06
9000	14	12	24	9	63	.1000000000001E+01	.2018751821746E-05
10000	15	15	26	10	76	.1000000000000E+01	.1769899330817E-06
TOTAL	144	134	249	95	3.99 (seconds)	proc= 93.06%	

46 CG Algorithm:DIXMAANE (CUTE) Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	225	69	361	135	127	.1000000000235E+01	.4148274737232E-05
2000	281	86	450	168	316	.1000000000067E+01	.4133273686749E-05
3000	425	129	671	245	709	.1000000000110E+01	.3612326555843E-05
4000	346	106	551	204	773	.1000000000357E+01	.5456155152189E-05
5000	415	128	658	242	1156	.1000000001358E+01	.5556689299045E-05
6000	677	197	1065	387	2252	.1000000001131E+01	.5530523685288E-05
7000	491	149	778	286	1914	.1000000000535E+01	.2360604446464E-05
8000	705	210	1132	425	3177	.1000000001395E+01	.2618943474633E-05
9000	592	179	943	350	2981	.1000000000614E+01	.6809260369574E-05
10000	584	170	937	352	3286	.1000000000610E+01	.2151857985729E-05
TOTAL	4741	1423	7546	2794	166.91 (seconds)	proc= 30.01%	

47 CG Algorithm:Partial Perturbed Quadratic Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	184	47	310	125	317	.2338899851991E-12	.9255430588953E-05
2000	252	62	429	176	1686	.6213602156133E-13	.7402012026825E-05
3000	249	57	424	174	3705	.1493130833969E-12	.7118560542014E-05
4000	134	28	235	100	3624	.2997718721403E-12	.1162393391044E-04
5000	83	19	147	63	3530	.2710137596337E-12	.7732461438394E-05
6000	66	15	115	48	3966	.1396165613622E-12	.1224316748288E-04
7000	34	6	62	27	2905	.2120261636544E-12	.2513618656659E-04
8000	25	4	47	21	2874	.9536224687673E-13	.1468371141067E-04
9000	20	2	38	17	2935	.1199685033673E-12	.2786470085798E-04
10000	21	2	40	18	3815	.2355026055407E-13	.1178124845363E-04
TOTAL	1068	242	1847	769	293.57 (seconds)	proc= 22.66%	

48 CG Algorithm:Broyden Tridiagonal Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	37	16	63	22	4	.6874616482385E-13	.1978003017777E-05
2000	67	24	109	39	14	.3970671034876E+00	.2860060382987E-05
3000	84	32	130	43	26	.3970671034878E+00	.1925318635542E-05
4000	71	28	110	36	29	.3970671034878E+00	.4093900534687E-05
5000	81	31	130	46	42	.3970671034879E+00	.3474896223918E-05
6000	83	30	127	41	52	.3970671034878E+00	.1879021651206E-05
7000	88	37	136	45	63	.3970671034880E+00	.1749283584284E-05
8000	72	28	119	44	59	.3970671034876E+00	.1387065396947E-05
9000	78	27	126	45	73	.3970671034876E+00	.3307191399255E-05
10000	74	28	119	42	76	.3970671034876E+00	.1836687694209E-05
TOTAL	735	281	1169	403	4.38 (seconds)	proc= 38.23%	

49 CG Algorithm:Almost Perturbed Quadratic Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	333	92	538	204	32	.1439805688184E-12	.3081405868342E-05
2000	494	150	779	284	97	.1939173786000E-12	.3672471070232E-05
3000	687	205	1092	404	201	.2378787581687E-13	.2291045400720E-05
4000	669	214	1068	398	262	.2412514678446E-12	.2665909858470E-05
5000	627	183	1003	375	306	.6121302082704E-13	.2817026592211E-05
6000	969	287	1545	575	568	.9209114485451E-14	.3328016276725E-05
7000	1066	325	1685	618	728	.2058094964188E-12	.2624318299931E-05
8000	998	300	1595	596	780	.9354532763664E-13	.1938560855152E-05
9000	1065	320	1701	635	936	.1206303465709E-14	.3118960577522E-05
10000	1144	360	1818	673	1116	.3135168325543E-13	.3548271685557E-05
TOTAL	8052	2436	12824	4762	50.26 (seconds)	proc= 30.25%	

50 CG Algorithm:Tridiagonal Perturbed Quadratic Function

betatype = 3 (Polak - Ribiere - Polyak). stoptest= 1

n	iter	irs	fgcnt	lscnt	time(c)	fxnew	gnorm
1000	293	82	477	183	43	.3473995441678E-12	.3885590083520E-05
2000	547	161	873	325	157	.6428542074818E-13	.3398444840847E-05
3000	618	187	981	362	268	.1103565913844E-13	.2361426830733E-05
4000	605	182	955	349	347	.2511325630695E-12	.3130945022176E-05
5000	712	213	1139	426	515	.9107022395081E-13	.3151970118372E-05
6000	727	215	1155	427	627	.1277409177771E-12	.6700042867114E-05
7000	961	290	1519	557	967	.7694589316644E-14	.5979894557825E-05
8000	946	277	1497	550	1087	.5344064995887E-13	.2650493724158E-05
9000	1128	353	1794	665	1462	.9385477444752E-13	.5397206439767E-05
10000	1174	349	1877	702	1693	.3118647512248E-13	.5678733984294E-05
TOTAL	7711	2309	12267	4546	71.66 (seconds)	proc= 29.94%	

****
CG - Conjugate Gradient package
betatype = 3 (Polak - Ribiere - Polyak)
Powell restart
stoptest = 1 : $\|\nabla f(x_k)\|_\infty \le 10^{-6}$
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