

## CHAPTER 6 GEOPOTENTIAL

The recommended geopotential field is the GEM-T3 model given in the following table.

The  $GM_{\oplus}$  and  $a_e$  values reported with GEM-T3 ( $398600.436 \text{ km}^3/\text{s}^2$  and  $6378137 \text{ m}$ ) should be used as scale parameters with the geopotential coefficients. The recommended  $GM_{\oplus} = 398600.4418$  should be used with the two-body term. Although the GEM-T3 is given with terms through degree and order 50, only terms through degree and order twenty are required for Lageos.

Values for the  $C_{21}$  and  $S_{21}$  coefficients are not included in the GEM-T3 model (they were constrained to be zero in the solution), and so they should be handled separately.

The  $C_{21}$  and  $S_{21}$  coefficients describe the position of the Earth's figure axis. When averaged over many years, the figure axis should closely coincide with the observed position of the rotation pole averaged over the same time period. Any differences between the mean figure and mean rotation pole averaged would be due to long-period fluid motions in the atmosphere, oceans, or Earth's fluid core (Wahr, 1987, 1990). At present, there is no independent evidence that such motions are important. So, it is recommended that the mean values used for  $C_{21}$  and  $S_{21}$  give a mean figure axis that corresponds to the mean pole position of the Chapter 3 Terrestrial Reference Frame.

The BIH Circular D pole positions from 1982 through 1988 are consistent with the IERS Reference Pole to within  $\pm 0.005$  corresponding to an uncertainty of  $\pm 0.01 \times 10^{-9}$  in  $C_{21}$ (IERS) and  $S_{21}$ (IERS).

This choice for  $C_{21}$  and  $S_{21}$  is realized as follows. First, to use the geopotential coefficients to solve for a satellite orbit, it is necessary to rotate from the Earth-fixed frame, where the coefficients are pertinent, to an inertial frame, where the satellite motion is computed. This transformation between frames should include polar motion. We assume the polar motion parameters used are relative to the IERS Reference Pole. Then, if  $C_{21} = S_{21} = 0$  were used, the assumed mean figure axis would coincide with the IERS Reference Pole.

If  $\bar{x}$  and  $\bar{y}$  are the angular displacements of the Terrestrial Reference Frame described in Chapter 3 relative to the IERS Reference Pole then the values

$$\bar{C}_{21} = \sqrt{3} \bar{x}\bar{C}_{20},$$

$$\bar{S}_{21} = -\sqrt{3} \bar{y}\bar{C}_{20},$$

where  $\bar{x} = 2.0362 \times 10^{-7}$  (equivalent to 0"042 in radians) and  $\bar{y} = 1.421 \times 10^{-6}$  (equivalent to 0"293 in radians) (Lambeck, 1970) should be added to the geopotential model, so that the mean figure axis coincides with the pole described in Chapter 3. This gives normalized coefficients of

$$\bar{C}_{21}(\text{IERS}) = -0.17 \times 10^{-9},$$

$$\bar{S}_{21}(\text{IERS}) = 1.19 \times 10^{-9}.$$

For consistency with the IERS Terrestrial Reference Frame, the  $\bar{C}_{21}(\text{IERS})$  and  $\bar{S}_{21}(\text{IERS})$  are recommended for use in place of  $C_{21}(\text{GEM-T3})$  and  $S_{21}(\text{GEM-T3})$ .

## References

- Lambeck, K., 1971, "Determination of the Earth's Pole of Rotation from Laser Range Observations to Satellites," *Bull. Geod.*, **101**, pp. 263-280.
- Lerch, F., Nerem, R., Putney, B., Felstentreger, T., Sanchez, B., Klosko, S., Patel, G., Williamson, R., Chinn, D., Chan, J., Rachlin, K., Chandler, N., McCarthy, J., Marshall, J., Luthcke, S., Pavlis, D., Robbins, J., Kapoor, S., Pavlis, E., 1992, *NASA Technical Memorandum 104555*, NASA Goddard Space Flight Center, Greenbelt, MD.
- Wahr, J., 1987, "The Earth's  $C_{21}$  and  $S_{21}$  gravity coefficients and the rotation of the core," *Geophys. J. Roy. Astr. Soc.*, **88**, pp. 265-276.
- Wahr, J., 1990, "Corrections and Update to 'The Earth's  $C_{21}$  and  $S_{21}$  gravity coefficients and the rotation of the core'," *Geophys. J. Int.*, **101**, pp. 709-711.

GEM-T3 NORMALIZED COEFFICIENTS

( $\times 10^6$ )

ZONALS

INDEX	VALUE	INDEX	VALUE	INDEX	VALUE	INDEX	VALUE	INDEX	VALUE
n m		n m		n m		n m		n m	
*2 0	-484.1650994	3 0	0.9572011	4 0	0.5395212	5 0	0.0683433	6 0	-0.1495135
7 0	0.0913009	8 0	0.0488832	9 0	0.0268624	10 0	0.0540650	11 0	-0.0494638
12 0	0.0356285	13 0	0.0401122	14 0	-0.0215549	15 0	0.0032275	16 0	-0.0061891
17 0	0.0174266	18 0	0.0085246	19 0	-0.0021551	20 0	0.0199238	21 0	0.0060954
22 0	-0.0095105	23 0	-0.0216426	24 0	-0.0002292	25 0	0.0051981	26 0	0.0057590
27 0	0.0037752	28 0	-0.0099775	29 0	-0.0025026	30 0	0.0067263	31 0	0.0059286
32 0	-0.0040391	33 0	-0.0011500	34 0	-0.0045042	35 0	0.0068919	36 0	-0.0037241
37 0	-0.0066619	38 0	0.0006767	39 0	0.0004215	40 0	-0.0017227	41 0	-0.0023976
42 0	0.0018083	43 0	0.0045338	44 0	0.0024867	45 0	-0.0028338	46 0	-0.0015925
47 0	0.0000205	48 0	0.0031619	49 0	-0.0011610	50 0	-0.0032544		

SECTORIALS AND TESSERALS

Index	Value		Index	Value		Index	Value	
n m	c	s	n m	c	s	n m	c	s
2 2	2.4390658	-1.4000946						
3 1	2.0277142	0.2492171	3 2	0.9044707	-0.6194477	3 3	0.7203425	1.4138845
4 1	-0.5361511	-0.4734360	4 2	0.3502181	0.6630152	4 3	0.9909337	-0.2009274
4 4	-0.1887706	0.3094237						
5 1	-0.0582802	-0.0960839	5 2	0.6527110	-0.3238637	5 3	-0.4523301	-0.2152958
5 4	-0.2955841	0.0496903	5 5	0.1737635	-0.6689070			
6 1	-0.0768942	0.0269984	6 2	0.0487345	-0.3740131	6 3	0.0572032	0.0093728
6 4	-0.0868265	-0.4713064	6 5	-0.2673304	-0.5367802	6 6	0.0096846	-0.2371348
7 1	0.2748687	0.0974659	7 2	0.3277950	0.0932467	7 3	0.2512201	-0.2152927
7 4	-0.2755610	-0.1237672	7 5	0.0013262	0.0186200	7 6	-0.3588314	0.1517387
7 7	0.0009703	0.0240836						
8 1	0.0236282	0.0588472	8 2	0.0775985	0.0660087	8 3	-0.0177852	-0.0863470
8 4	-0.2463398	0.0701796	8 5	-0.0250411	0.0894628	8 6	-0.0649237	0.3091226
8 7	0.0674622	0.0750948	8 8	-0.1241984	0.1201722			
9 1	0.1460968	0.0199707	9 2	0.0224514	-0.0335532	9 3	-0.1612938	-0.0759683
9 4	-0.0101377	0.0189722	9 5	-0.0171468	-0.0537733	9 6	0.0639143	0.2226482
9 7	-0.1190107	-0.0969910	9 8	0.1871323	-0.0023539	9 9	-0.0481324	0.0987392
10 1	0.0814935	-0.1302777	10 2	-0.0912766	-0.0511029	10 3	-0.0086059	-0.1550282
10 4	-0.0853424	-0.0787340	10 5	-0.0510215	-0.0511065	10 6	-0.0370547	-0.0783798
10 7	0.0075611	-0.0033501	10 8	0.0400547	-0.0916800	10 9	0.1243124	-0.0380328
10 10	0.0997532	-0.0224543						
11 1	0.0151438	-0.0266145	11 2	0.0167542	-0.0984958	11 3	-0.0284259	-0.1462895
11 4	-0.0406835	-0.0644826	11 5	0.0376146	0.0503126	11 6	-0.0003918	0.0349216
11 7	0.0038817	-0.0895537	11 8	-0.0069703	0.0253251	11 9	-0.0322248	0.0432902
11 10	-0.0520650	-0.0173310	11 11	0.0453181	-0.0690741			
12 1	-0.0545002	-0.0420954	12 2	0.0123808	0.0319206	12 3	0.0421598	0.0246728
12 4	-0.0695574	0.0028552	12 5	0.0319159	0.0096522	12 6	0.0041892	0.0401345
12 7	-0.0183894	0.0358166	12 8	-0.0255168	0.0161921	12 9	0.0409053	0.0243333
12 10	-0.0064899	0.0317633	12 11	0.0105182	-0.0068164	12 12	-0.0033602	-0.0108797

\*  $\bar{C}_{20}$  does not include the zero frequency term; see Chapter 7 (Eq. 5) for the adjusted value.

\*\*  $\bar{C}_{21}$  and  $\bar{S}_{21}$  should be the IERS values; see this chapter for recommended values.

Index			Value		Index			Value		Index			Value	
n	m		C	S	n	m		C	S	n	m		C	S
13	1		-0.0559665	0.0395293	13	2		0.0543242	-0.0634283	13	3		-0.0211569	0.0963808
13	4		-0.0038557	-0.0133028	13	5		0.0607207	0.0646537	13	6		-0.0341536	-0.0042568
13	7		0.0035556	-0.0058836	13	8		-0.0116966	-0.0088473	13	9		0.0241467	0.0460357
13	10		0.0414659	-0.0361843	13	11		-0.0445391	-0.0043063	13	12		-0.0312803	0.0877964
13	13		-0.0614129	0.0678124										
14	1		-0.0206693	0.0304582	14	2		-0.0371952	-0.0033551	14	3		0.0329887	0.0210216
14	4		-0.0007851	-0.0192933	14	5		0.0259548	-0.0162511	14	6		-0.0188109	0.0054356
14	7		0.0376788	-0.0063813	14	8		-0.0348919	-0.0149848	14	9		0.0322984	0.0276200
14	10		0.0385106	-0.0010119	14	11		0.0147653	-0.0394554	14	12		0.0083128	-0.0313314
14	13		0.0319584	0.0452989	14	14		-0.0517851	-0.0050039					
15	1		0.0130794	0.0070987	15	2		-0.0235054	-0.0333181	15	3		0.0542768	0.0150957
15	4		-0.0434805	0.0070734	15	5		0.0113901	0.0088505	15	6		0.0342069	-0.0358331
15	7		0.0568236	0.0061453	15	8		-0.0327261	0.0235054	15	9		0.0117403	0.0374328
15	10		0.0114793	0.0155961	15	11		-0.0008754	0.0191309	15	12		-0.0324556	0.0147756
15	13		-0.0287572	-0.0042554	15	14		0.0054459	-0.0243198	15	15		-0.0195731	-0.0051538
16	1		0.0237694	0.0340855	16	2		-0.0212918	0.0268320	16	3		-0.0341109	-0.0271230
16	4		0.0391220	0.0454734	16	5		-0.0141227	0.0000332	16	6		0.0169119	-0.0328518
16	7		-0.0069833	-0.0070595	16	8		-0.0206218	0.0056652	16	9		-0.0240037	-0.0383121
16	10		-0.0109552	0.0128282	16	11		0.0184275	-0.0029384	16	12		0.0198974	0.0061632
16	13		0.0137124	0.0012041	16	14		-0.0196596	-0.0386771	16	15		-0.0134780	-0.0333624
16	16		-0.0361270	0.0037964										
17	1		-0.0273808	-0.0318449	17	2		-0.0191519	0.0077318	17	3		0.0127131	0.0085514
17	4		0.0068147	0.0210642	17	5		-0.0125322	0.0050564	17	6		-0.0109756	-0.0274779
17	7		0.0247642	-0.0035158	17	8		0.0378171	0.0039291	17	9		0.0022023	-0.0283061
17	10		-0.0025898	0.0186970	17	11		-0.0157889	0.0118557	17	12		0.0291379	0.0193775
17	13		0.0164865	0.0207531	17	14		-0.0140956	0.0116438	17	15		0.0053064	0.0053556
17	16		-0.0294099	0.0032961	17	17		-0.0329779	-0.0190370					
18	1		0.0012802	-0.0362621	18	2		0.0131239	0.0129394	18	3		-0.0033638	-0.0014744
18	4		0.0521647	0.0020212	18	5		0.0019873	0.0291036	18	6		0.0156997	-0.0115996
18	7		0.0058839	0.0033474	18	8		0.0301291	0.0024813	18	9		-0.0178758	0.0344506
18	10		0.0047002	-0.0051744	18	11		-0.0078403	0.0021961	18	12		-0.0287346	-0.0169012
18	13		-0.0061816	-0.0346579	18	14		-0.0088533	-0.0128693	18	15		-0.0393857	-0.0208743
18	16		0.0113318	0.0071843	18	17		0.0036682	0.0050833	18	18		0.0027594	-0.0105434
19	1		-0.0096289	-0.0029679	19	2		0.0275281	-0.0023289	19	3		-0.0033835	-0.0009951
19	4		0.0121511	-0.0042207	19	5		0.0154597	0.0273694	19	6		-0.0038121	0.0201077
19	7		0.0050712	-0.0063049	19	8		0.0294184	-0.0093126	19	9		0.0022164	0.0025673
19	10		-0.0337049	-0.0069966	19	11		0.0157465	0.0102937	19	12		-0.0021222	0.0081173
19	13		-0.0070964	-0.0280235	19	14		-0.0048124	-0.0129043	19	15		-0.0175393	-0.0137024
19	16		-0.0210506	-0.0075292	19	17		0.0306525	-0.0137472	19	18		0.0330342	-0.0087291
19	19		-0.0023480	0.0042819										
20	1		0.0052111	0.0058030	20	2		0.0174860	0.0137476	20	3		-0.0081594	0.0303065
20	4		0.0014180	-0.0229616	20	5		-0.0134176	-0.0035994	20	6		0.0113814	0.0008935
20	7		-0.0194055	-0.0015386	20	8		0.0049122	0.0034216	20	9		0.0190121	-0.0048859
20	10		-0.0301615	-0.0054108	20	11		0.0131223	-0.0184290	20	12		-0.0059513	0.0173580
20	13		0.0277741	0.0067269	20	14		0.0108561	-0.0139252	20	15		-0.0246481	-0.0014079
20	16		-0.0106927	-0.0002663	20	17		0.0044349	-0.0125965	20	18		0.0152411	-0.0005928
20	19		-0.0047068	0.0106734	20	20		0.0040221	-0.0112091					
21	1		-0.0171788	0.0205518	21	2		-0.0061390	0.0047932	21	3		0.0263792	0.0187134
21	4		-0.0094317	0.0139320	21	5		0.0043733	-0.0009704	21	6		-0.0116607	0.0018168
21	7		-0.0118226	0.0035729	21	8		-0.0152436	0.0040667	21	9		0.0150203	0.0068850
21	10		-0.0096824	-0.0005874	21	11		0.0084047	-0.0351392	21	12		-0.0019522	0.0140674
21	13		-0.0185066	0.0136367	21	14		0.0203698	0.0079163	21	15		0.0178471	0.0109014
21	16		0.0084445	-0.0073172	21	17		-0.0056776	-0.0059467	21	18		0.0243699	-0.0094126
21	19		-0.0277508	0.0153133	21	20		-0.0263062	0.0158605	21	21		0.0075180	-0.0022236
22	1		0.0096642	-0.0009644	22	2		-0.0196408	-0.0020826	22	3		0.0092976	0.0082274
22	4		-0.0038186	0.0143386	22	5		-0.0082423	0.0035020	22	6		0.0138314	-0.0052023
22	7		0.0146058	0.0018228	22	8		-0.0234988	0.0021983	22	9		0.0102897	0.0083148
22	10		0.0051671	0.0241261	22	11		-0.0034556	-0.0164381	22	12		0.0038281	-0.0087932
22	13		-0.0169513	0.0197295	22	14		0.0101780	0.0077608	22	15		0.0263472	0.0042003
22	16		0.0012215	-0.0071400	22	17		0.0089480	-0.0134798	22	18		0.0087670	-0.0149852
22	19		0.0125137	-0.0037544	22	20		-0.0166678	0.0189291	22	21		-0.0246156	0.0223187
22	22		-0.0089299	0.0024228										

Index				Value		Index				Value		Index				Value																																																																																																			
n	m	C		S		n	m	C		S		n	m	C		S																																																																																																			
		23	1	0.0063465	0.0130062			23	2	-0.0130827	-0.0040371			23	3	-0.0121940	-0.0173193	23	4	-0.0191162	0.0064667	23	5	0.0080082	-0.0023536	23	6	-0.0128872	0.0167174	23	7	-0.0061313	0.0028610	23	8	0.0055469	-0.0015897	23	9	-0.0005856	-0.0184242	23	10	0.0145345	-0.0031764	23	11	0.0080666	0.0153789	23	12	0.0170577	-0.0133824	23	13	-0.0111264	-0.0044652	23	14	0.0068014	-0.0020947	23	15	0.0184178	-0.0031340	23	16	0.0068979	0.0111168	23	17	-0.0040494	-0.0116880	23	18	0.0074796	-0.0120752	23	19	-0.0071169	0.0090105	23	20	0.0098040	-0.0068659	23	21	0.0157680	0.0132542	23	22	-0.0170923	0.0036873	23	23	0.0045640	-0.0108964																		
24	1	-0.0050423	-0.0033127	24	2	-0.0021465	0.0134247	24	3	-0.0033462	-0.0082340	24	4	0.0071525	0.0037349	24	5	-0.0060088	-0.0126654	24	6	0.0042666	0.0009019	24	7	-0.0024921	0.0028966	24	8	0.0156587	-0.0048357	24	9	-0.0074084	-0.0162834	24	10	0.0113588	0.0172884	24	11	0.0118893	0.0185777	24	12	0.0116255	-0.0055536	24	13	-0.0025191	0.0027378	24	14	-0.0201557	-0.0006099	24	15	0.0066161	-0.0161023	24	16	0.0094515	0.0037852	24	17	-0.0119890	-0.0046886	24	18	-0.0007572	-0.0095976	24	19	-0.0049208	-0.0086425	24	20	-0.0049044	0.0076167	24	21	0.0081466	0.0126573	24	22	0.0033959	-0.0019883	24	23	-0.0071693	-0.0091901	24	24	0.0111403	-0.0032617																				
25	1	0.0065866	-0.0105297	25	2	0.0164017	0.0104728	25	3	-0.0068317	-0.0146739	25	4	0.0051081	0.0041833	25	5	-0.0037811	-0.0036623	25	6	0.0146476	0.0039237	25	7	0.0069129	-0.0074194	25	8	0.0051782	0.0016270	25	9	-0.0297856	0.0136280	25	10	0.0075753	-0.0047882	25	11	0.0044306	0.0079569	25	12	-0.0082098	0.0122275	25	13	0.0080624	-0.0116876	25	14	-0.0206731	0.0078295	25	15	-0.0036319	-0.0072531	25	16	0.0015538	-0.0128630	25	17	-0.0131607	-0.0014118	25	18	0.0006051	-0.0129151	25	19	0.0065226	0.0084412	25	20	-0.0062665	-0.0021786	25	21	0.0120874	0.0078646	25	22	-0.0127725	0.0041807	25	23	0.0084211	-0.0108240	25	24	0.0048718	-0.0077411	25	25	0.0089668	0.0052191																
26	1	-0.0026664	-0.0082430	26	2	-0.0015746	0.0092185	26	3	0.0090689	-0.0031308	26	4	0.0147221	-0.0165285	26	5	0.0038380	0.0106647	26	6	0.0114084	-0.0064852	26	7	-0.0002373	0.0011771	26	8	0.0035161	0.0014723	26	9	-0.0072798	0.0016990	26	10	-0.0130950	-0.0042049	26	11	-0.0017838	0.0018849	26	12	-0.0167307	0.0017457	26	13	0.0001750	0.0021769	26	14	0.0073958	0.0065215	26	15	-0.0136750	0.0076166	26	16	0.0025097	-0.0075036	26	17	-0.0108818	0.0080828	26	18	-0.0131056	0.0059036	26	19	-0.0011322	0.0029262	26	20	0.0066384	-0.0129144	26	21	-0.0065967	0.0016121	26	22	0.0121192	0.0084746	26	23	-0.0002176	0.0118854	26	24	0.0067431	0.0131699	26	25	0.0036502	0.0014493	26	26	-0.0008396	0.0053570												
27	1	0.0039251	-0.0001427	27	2	0.0036962	0.0031720	27	3	0.0056586	0.0021285	27	4	0.0005868	0.0092714	27	5	0.0157567	0.0079196	27	6	0.0000031	0.0062788	27	7	-0.0128755	-0.0023621	27	8	-0.0052481	-0.0098613	27	9	0.0001650	0.0076483	27	10	-0.0128522	0.0007021	27	11	0.0027288	-0.0076154	27	12	-0.0086416	0.0004264	27	13	-0.0045566	-0.0025631	27	14	0.0161760	0.0106701	27	15	-0.0023151	0.0010878	27	16	0.0043339	0.0016663	27	17	0.0045031	0.0009341	27	18	-0.0026533	0.0109539	27	19	-0.0008081	-0.0041454	27	20	0.0006343	0.0023214	27	21	0.0059841	-0.0055616	27	22	-0.0054096	0.0034241	27	23	-0.0050968	-0.0080894	27	24	0.0000222	-0.0006148	27	25	0.0107286	0.0039942	27	26	-0.0058367	-0.0029276	27	27	0.0068460	0.0021541								
28	1	-0.0073065	0.0062148	28	2	-0.0119628	-0.0116064	28	3	0.0024984	0.0090420	28	4	0.0042378	0.0033269	28	5	0.0055800	0.0003283	28	6	-0.0023067	0.0049177	28	7	-0.0008591	0.0052729	28	8	-0.0020045	-0.0053160	28	9	0.0082431	-0.0064753	28	10	-0.0075322	0.0079033	28	11	-0.0041603	0.0023566	28	12	0.0014296	0.0109002	28	13	0.0016576	0.0055353	28	14	-0.0062353	-0.0109321	28	15	-0.0108597	-0.0009772	28	16	-0.0031454	-0.0119188	28	17	0.0135711	-0.0034580	28	18	0.0038205	-0.0029946	28	19	0.0041720	0.0224177	28	20	-0.0018593	0.0046445	28	21	0.0077244	0.0053421	28	22	-0.0010523	-0.0058838	28	23	0.0045909	0.0029153	28	24	0.0096282	-0.0137817	28	25	0.0056097	-0.0172084	28	26	0.0086338	0.0029512	28	27	-0.0073755	0.0011044	28	28	0.0072606	0.0054995				
29	1	0.0019969	-0.0031928	29	2	-0.0025286	-0.0006536	29	3	0.0015286	-0.0082880	29	4	-0.0219913	-0.0001364	29	5	-0.0031615	0.0018419	29	6	0.0099066	0.0068548	29	7	-0.0044996	-0.0046636	29	8	-0.0121845	0.0074113	29	9	-0.0050682	-0.0038189	29	10	0.0084163	0.0018969	29	11	-0.0057378	0.0070722	29	12	-0.0026580	-0.0017172	29	13	-0.0007273	-0.0017458	29	14	-0.0061507	-0.0043946	29	15	-0.0077083	-0.0062682	29	16	-0.0001679	-0.0131772	29	17	0.0004103	-0.0028975	29	18	-0.0048796	-0.0036690	29	19	-0.0062727	0.0057826	29	20	-0.0060496	0.0030399	29	21	-0.0077158	-0.0040463	29	22	0.0124541	0.0007009	29	23	-0.0022660	0.0016815	29	24	0.0001001	-0.0009304	29	25	0.0056260	0.0063145	29	26	0.0090138	-0.0086781	29	27	-0.0067189	-0.0012353	29	28	0.0079715	-0.0053912	29	29	0.0104845	-0.0080465

Index			Value		Index			Value		Index			Value	
n	m		C	S	n	m		C	S	n	m		C	S
30	1		-0.0017521	-0.0017543	30	2		-0.0092718	-0.0030842	30	3		0.0038608	-0.0094093
30	4		-0.0008453	-0.0030521	30	5		-0.0019984	-0.0033849	30	6		0.0000790	-0.0014467
30	7		0.0070755	0.0014215	30	8		0.0016690	0.0025351	30	9		-0.0054353	-0.0075011
30	10		0.0016218	-0.0055395	30	11		-0.0110613	0.0099434	30	12		0.0123714	-0.0085305
30	13		0.0134213	0.0034719	30	14		0.0043796	0.0060830	30	15		-0.0016879	-0.0019559
30	16		-0.0088026	0.0033801	30	17		-0.0065044	-0.0043441	30	18		-0.0100442	-0.0078314
30	19		-0.0116142	0.0005241	30	20		-0.0039430	0.0107706	30	21		-0.0088595	-0.0065115
30	22		-0.0026737	-0.0055581	30	23		0.0033951	-0.0084043	30	24		-0.0026160	-0.0032619
30	25		0.0034385	-0.0150723	30	26		0.0003689	0.0100453	30	27		-0.0056395	0.0126688
30	28		-0.0037860	-0.0050892	30	29		0.0021892	0.0033030	30	30		-0.0000546	0.0041453
31	1		0.0046821	-0.0119952	31	2		0.0013617	0.0057275	31	3		-0.0063297	-0.0086681
31	4		0.0078644	-0.0008477	31	5		-0.0046503	-0.0020512	31	6		-0.0019375	0.0033188
31	7		0.0003401	-0.0024004	31	8		-0.0001190	0.0001917	31	9		-0.0014884	0.0017420
31	10		0.0001981	-0.0080774	31	11		0.0008508	0.0157155	31	12		0.0027783	0.0031965
31	13		0.0093805	0.0036678	31	14		-0.0060838	0.0031072	31	15		0.0017530	-0.0033483
31	16		-0.0046678	0.0052229	31	17		-0.0039763	0.0074653	31	18		-0.0011249	0.0019858
31	19		0.0025044	0.0022134	31	20		-0.0022369	0.0056220	31	21		-0.0061490	0.0052115
31	22		-0.0074700	-0.0090753	31	23		0.0086392	0.0061025	31	24		-0.0030547	-0.0029426
31	25		-0.0162449	-0.0017283	31	26		-0.0113406	-0.0009352	31	27		0.0006200	0.0101357
31	28		0.0089151	0.0028652	31	29		-0.0021781	-0.0041551	31	30		-0.0009474	-0.0056003
31	31		-0.0091732	-0.0018424										
32	1		-0.0019391	0.0003407	32	2		0.0083160	-0.0049377	32	3		-0.0015101	0.0013112
32	4		0.0020707	-0.0065448	32	5		0.0050124	0.0005448	32	6		-0.0059529	-0.0085579
32	7		0.0025425	0.0024856	32	8		0.0100396	0.0030255	32	9		0.0058074	0.0010645
32	10		0.0014409	-0.0056584	32	11		-0.0054062	0.0048110	32	12		-0.0125972	0.0139195
32	13		0.0041740	0.0023826	32	14		-0.0005282	0.0033685	32	15		0.0050419	-0.0077404
32	16		0.0025011	0.0031105	32	17		-0.0051155	0.0098834	32	18		0.0082254	0.0001041
32	19		-0.0001352	-0.0014221	32	20		0.0028538	0.0004540	32	21		-0.0015404	0.0090298
32	22		-0.0091125	-0.0020045	32	23		0.0067808	0.0000637	32	24		-0.0046501	0.0006893
32	25		-0.0180762	-0.0055121	32	26		0.0042350	-0.0037772	32	27		-0.0036280	-0.0070195
32	28		0.0029940	-0.0025111	32	29		0.0031745	0.0034310	32	30		-0.0042626	-0.0014378
32	31		-0.0032430	0.0005946	32	32		0.0050965	0.0024247					
33	1		-0.0031761	0.0007467	33	2		-0.0068686	0.0015229	33	3		-0.0054440	0.0026048
33	4		-0.0032131	0.0031032	33	5		-0.0048493	0.0011091	33	6		0.0011795	-0.0048727
33	7		-0.0048291	-0.0001447	33	8		0.0011497	0.0110768	33	9		0.0030106	0.0036264
33	10		-0.0027285	0.0005344	33	11		0.0020113	-0.0077170	33	12		-0.0006898	0.0101392
33	13		0.0034057	0.0052654	33	14		0.0037931	0.0034850	33	15		-0.0050422	-0.0017867
33	16		0.0043555	0.0037108	33	17		-0.0043786	0.0094764	33	18		-0.0096200	-0.0049603
33	19		0.0084762	0.0024841	33	20		-0.0008262	-0.0080769	33	21		0.0017740	0.0030135
33	22		-0.0060013	-0.0132287	33	23		-0.0007092	-0.0071528	33	24		0.0090193	-0.0062329
33	25		0.0029450	-0.0104979	33	26		0.0105189	0.0027860	33	27		-0.0008576	0.0016316
33	28		0.0009262	0.0003210	33	29		-0.0159411	0.0040291	33	30		-0.0003193	-0.0173273
33	31		0.0036344	0.0022099	33	32		0.0065942	-0.0041506	33	33		0.0024732	0.0089333
34	1		-0.0001409	0.0024123	34	2		0.0096775	0.0063670	34	3		0.0101568	0.0074331
34	4		-0.0044927	-0.0037018	34	5		-0.0040991	0.0059137	34	6		-0.0003786	0.0035989
34	7		0.0044473	-0.0033291	34	8		-0.0135093	0.0037096	34	9		0.0000574	0.0040019
34	10		-0.0067002	0.0008173	34	11		-0.0042243	0.0024097	34	12		0.0103061	-0.0024785
34	13		-0.0052038	0.0031756	34	14		-0.0012806	0.0071895	34	15		-0.0009321	0.0071018
34	16		0.0005727	-0.0022595	34	17		-0.0055791	0.0004070	34	18		-0.0109181	-0.0058118
34	19		-0.0003830	0.0042619	34	20		0.0043770	-0.0057622	34	21		-0.0005696	-0.0057345
34	22		-0.0020442	0.0056377	34	23		-0.0014310	-0.0080674	34	24		0.0048197	0.0045287
34	25		0.0058310	-0.0095515	34	26		0.0024295	-0.0136956	34	27		0.0125297	-0.0041028
34	28		0.0010961	-0.0184406	34	29		0.0051354	-0.0047807	34	30		-0.0169733	-0.0019148
34	31		-0.0028722	0.0011197	34	32		0.0062400	0.0036500	34	33		0.0106401	0.0017421
34	34		-0.0057815	0.0009623										
35	1		-0.0110388	-0.0057405	35	2		-0.0132095	0.0024944	35	3		0.0021370	0.0035835
35	4		0.0001172	0.0018779	35	5		-0.0062657	-0.0089832	35	6		0.0015395	0.0060509
35	7		-0.0011804	0.0029285	35	8		0.0023739	0.0101232	35	9		-0.0041608	-0.0017540
35	10		-0.0063195	0.0068520	35	11		0.0032848	-0.0018095	35	12		0.0067832	-0.0054193
35	13		-0.0017808	0.0025409	35	14		-0.0068707	-0.0067366	35	15		-0.0143511	0.0087397
35	16		-0.0041017	-0.0012433	35	17		0.0007911	-0.0072514	35	18		-0.0044956	-0.0091086
35	19		0.0004439	-0.0043685	35	20		-0.0011466	0.0028395	35	21		0.0104901	-0.0001515
35	22		0.0022850	0.0041636	35	23		-0.0067572	-0.0019524	35	24		0.0021631	0.0048391
35	25		0.0053014	0.0017015	35	26		-0.0046326	0.0017638	35	27		0.0116954	-0.0131225
35	28		0.0068818	-0.0150441	35	29		0.0080871	0.0018070	35	30		-0.0026502	0.0036857
35	31		0.0064792	0.0066707	35	32		-0.0053443	-0.0060513	35	33		0.0060071	-0.0016236

Index		Value		Index		Value		Index		Value	
n	m	C	S	n	m	C	S	n	m	C	S
35	34	-0.0020539	0.0025193	35	35	-0.0055092	-0.0049306				
36	1	0.0023560	0.0050525	36	2	-0.0048740	-0.0020946	36	3	-0.0006015	-0.0099549
36	4	0.0008456	-0.0030955	36	5	-0.0035798	0.0001649	36	6	0.0073452	-0.0046862
36	7	0.0007953	0.0041388	36	8	0.0003665	-0.0034356	36	9	0.0023524	-0.0012762
36	10	0.0013133	0.0053536	36	11	-0.0004069	0.0019427	36	12	-0.0007252	-0.0034005
36	13	-0.0065508	0.0056450	36	14	-0.0080168	-0.0041710	36	15	0.0007518	0.0021176
36	16	0.0003254	0.0020824	36	17	0.0054933	-0.0044269	36	18	0.0003531	0.0040581
36	19	-0.0042858	-0.0035370	36	20	-0.0057191	0.0016195	36	21	0.0062678	-0.0047130
36	22	0.0009862	-0.0006426	36	23	-0.0009853	0.0000774	36	24	0.0017057	-0.0045421
36	25	0.0034153	0.0137161	36	26	0.0030975	0.0073591	36	27	-0.0071208	0.0073981
36	28	0.0019694	-0.0034621	36	29	0.0027623	-0.0001453	36	30	-0.0089974	0.0043111
36	31	-0.0058913	-0.0007781	36	32	0.0074786	0.0047942	36	33	0.0013699	-0.0066836
36	34	-0.0057021	0.0048662	36	35	-0.0014267	-0.0090704	36	36	0.0013751	-0.0038035
37	1	-0.0049156	0.0000010	37	2	-0.0040717	-0.0121681	37	3	-0.0012606	0.0023331
37	4	0.0030456	0.0004847	37	5	-0.0067343	-0.0012726	37	6	-0.0025474	0.0067216
37	7	0.0002984	0.0016145	37	8	-0.0003339	-0.0016667	37	9	0.0014276	-0.0018175
37	10	-0.0002799	0.0016925	37	11	0.0023445	0.0001202	37	12	-0.0023757	-0.0007566
37	13	-0.0001109	-0.0071643	37	14	-0.0027542	-0.0027844	37	15	0.0081779	-0.0015877
37	16	0.0025799	0.0121828	37	17	0.0034629	-0.0018732	37	18	-0.0006381	0.0028466
37	19	-0.0056396	0.0002456	37	20	-0.0066777	-0.0041323	37	21	0.0015215	-0.0018213
37	22	0.0065414	0.0008810	37	23	-0.0011832	0.0008553	37	24	-0.0053148	-0.0060258
37	25	0.0047611	-0.0027142	37	26	0.0034336	0.0087185	37	27	-0.0029964	0.0033606
37	28	0.0128425	0.0045323	37	29	0.0070112	0.0043474	37	30	-0.0064958	0.0123353
37	31	0.0025817	-0.0060123	37	32	-0.0030583	0.0053792	37	33	0.0001545	-0.0156965
37	34	0.0019726	-0.0008856	37	35	-0.0081669	-0.0085347	37	36	-0.0033317	-0.0040689
37	37	0.0035724	-0.0024595								
38	1	0.0051868	0.0005152	38	2	0.0053427	0.0012862	38	3	-0.0012612	-0.0011765
38	4	0.0006688	-0.0003666	38	5	-0.0046791	0.0051471	38	6	-0.0079824	0.0034923
38	7	-0.0020373	-0.0012743	38	8	0.0010329	0.0019980	38	9	0.0035695	0.0004752
38	10	-0.0031151	-0.0034466	38	11	-0.0011352	0.0056709	38	12	-0.0012791	-0.0028368
38	13	-0.0009556	-0.0083390	38	14	-0.0025002	0.0012922	38	15	0.0021553	-0.0027905
38	16	-0.0050750	0.0054249	38	17	0.0014166	0.0016680	38	18	0.0065761	-0.0012532
38	19	0.0010060	-0.0013716	38	20	0.0010583	-0.0021540	38	21	0.0016723	-0.0001027
38	22	0.0004339	0.0071497	38	23	-0.0002480	0.0043683	38	24	-0.0084124	0.0001756
38	25	-0.0014453	-0.0007891	38	26	-0.0039493	0.0045460	38	27	-0.0016060	0.0069831
38	28	-0.0043893	-0.0038518	38	29	0.0059171	0.0020835	38	30	0.0011511	0.0026892
38	31	0.0023266	-0.0043175	38	32	0.0025487	0.0030305	38	33	-0.0000432	0.0075551
38	34	-0.0044932	0.0019497	38	35	0.0041587	0.0040092	38	36	-0.0004538	-0.0020779
38	37	-0.0018945	0.0010750	38	38	0.0030752	-0.0011208				
39	1	-0.0029291	0.0049006	39	2	0.0039756	0.0045104	39	3	-0.0014023	0.0044364
39	4	-0.0025898	-0.0028432	39	5	0.0007810	0.0031819	39	6	0.0006507	0.0041436
39	7	0.0004544	-0.0029071	39	8	0.0009166	0.0091713	39	9	0.0051866	0.0038905
39	10	0.0001178	0.0000877	39	11	0.0099610	-0.0001755	39	12	-0.0029172	0.0067749
39	13	-0.0008276	-0.0035592	39	14	-0.0044839	0.0007530	39	15	-0.0024110	0.0017039
39	16	-0.0014517	-0.0027009	39	17	-0.0014440	-0.0020140	39	18	0.0010577	-0.0019332
39	19	0.0037789	0.0047925	39	20	-0.0003241	-0.0097518	39	21	-0.0027525	-0.0020255
39	22	-0.0033813	-0.0004058	39	23	-0.0026940	0.0043824	39	24	-0.0068925	0.0057119
39	25	-0.0020101	-0.0027154	39	26	-0.0023117	0.0071160	39	27	-0.0077364	-0.0021167
39	28	-0.0024204	-0.0101477	39	29	-0.0020169	-0.0033467	39	30	0.0055821	-0.0098472
39	31	0.0018862	-0.0073454	39	32	0.0001311	0.0052857	39	33	-0.0083180	0.0003784
39	34	-0.0009031	0.0001508	39	35	-0.0103099	0.0028057	39	36	0.0028572	-0.0017494
39	37	-0.0016599	-0.0048817	39	38	-0.0016177	0.0037600	39	39	-0.0000654	0.0001047
40	1	0.0032840	-0.0001586	40	2	-0.0021234	0.0011420	40	3	-0.0031044	-0.0025156
40	4	0.0017363	-0.0043984	40	5	0.0088006	0.0003928	40	6	-0.0001346	0.0009513
40	7	-0.0026367	0.0053655	40	8	0.0040907	0.0007677	40	9	-0.0010176	0.0008677
40	10	-0.0042810	0.0032747	40	11	0.0020340	-0.0001802	40	12	0.0044421	0.0000164
40	13	-0.0037796	-0.0018936	40	14	0.0006834	0.0015879	40	15	-0.0038797	0.0005316
40	16	-0.0031858	-0.0037195	40	17	0.0005927	-0.0008076	40	18	-0.0005346	-0.0013222
40	19	-0.0012587	-0.0000521	40	20	-0.0043835	0.0046265	40	21	-0.0014222	-0.0011424
40	22	-0.0063277	-0.0117123	40	23	-0.0012227	-0.0094841	40	24	0.0030406	0.0039924
40	25	0.0007345	-0.0028817	40	26	0.0060268	-0.0019383	40	27	-0.0005875	0.0011196
40	28	0.0029705	0.0049953	40	29	0.0017296	0.0011912	40	30	0.0008827	0.0011420
40	31	-0.0055260	0.0005049	40	32	-0.0033430	-0.0027049	40	33	-0.0031163	-0.0032749
40	34	0.0030161	-0.0004945	40	35	0.0052964	-0.0050303	40	36	0.0004912	0.0040246
40	37	-0.0023041	0.0009372	40	38	0.0000925	0.0051273	40	39	0.0057131	0.0021486
40	40	-0.0013794	-0.0021706								

Index			Value		Index			Value		Index			Value	
n	m		C	S	n	m		C	S	n	m		C	S
41	1		-0.0032974	-0.0024119	41	2		0.0028399	0.0014783	41	3		0.0034184	0.0032957
41	4		-0.0015694	0.0019214	41	5		0.0012139	-0.0016050	41	6		-0.0001380	0.0005462
41	7		0.0009845	0.0007174	41	8		-0.0020735	-0.0031634	41	9		-0.0044253	0.0036733
41	10		0.0048671	-0.0006390	41	11		0.0020043	-0.0041575	41	12		0.0007892	0.0005245
41	13		-0.0014747	0.0009168	41	14		0.0012302	-0.0012876	41	15		-0.0005881	0.0013570
41	16		-0.0020793	-0.0004557	41	17		-0.0011739	0.0011708	41	18		0.0005731	0.0047586
41	19		0.0004196	-0.0008594	41	20		-0.0008079	-0.0009923	41	21		0.0001517	-0.0000071
41	22		-0.0056367	-0.0008416	41	23		0.0006823	-0.0092436	41	24		0.0039405	-0.0012279
41	25		-0.0009173	0.0025235	41	26		0.0042286	-0.0057720	41	27		0.0015488	-0.0000018
41	28		-0.0013986	-0.0042759	41	29		-0.0030313	0.0037440	41	30		0.0026878	-0.0015818
41	31		0.0086719	0.0021279	41	32		-0.0052892	0.0042570	41	33		-0.0040296	0.0074972
41	34		-0.0022838	0.0005172	41	35		-0.0098255	0.0043609	41	36		0.0017542	-0.0012226
41	37		-0.0009056	-0.0100823	41	38		-0.0065801	-0.0000297	41	39		-0.0035437	-0.0002503
41	40		0.0020794	-0.0019584	41	41		0.0022039	0.0040887					
42	1		-0.0010549	0.0024804	42	2		-0.0020493	-0.0017886	42	3		-0.0000935	0.0054527
42	4		0.0019032	0.0017889	42	5		-0.0056812	-0.0044196	42	6		-0.0006180	-0.0007461
42	7		0.0035194	-0.0021540	42	8		0.0008779	0.0015092	42	9		-0.0003542	0.0011971
42	10		0.0030211	0.0044013	42	11		0.0008017	0.0014187	42	12		0.0043636	-0.0077228
42	13		0.0006714	0.0010780	42	14		-0.0036389	0.0031713	42	15		-0.0008635	0.0052410
42	16		0.0030972	-0.0029467	42	17		-0.0027801	-0.0024590	42	18		-0.0085518	0.0038762
42	19		-0.0012846	-0.0015350	42	20		0.0058399	0.0020848	42	21		0.0012403	-0.0011678
42	22		-0.0009454	-0.0015454	42	23		-0.0031263	-0.0008805	42	24		0.0009781	0.0017079
42	25		-0.0049920	0.0015279	42	26		-0.0014004	-0.0054051	42	27		0.0046599	-0.0009781
42	28		-0.0028763	0.0024781	42	29		-0.0048047	-0.0004893	42	30		0.0035784	0.0007136
42	31		0.0055411	0.0046499	42	32		0.0039092	0.0044224	42	33		0.0016808	0.0037711
42	34		0.0031443	0.0069991	42	35		-0.0029544	-0.0002303	42	36		0.0045869	-0.0055909
42	37		-0.0026086	0.0037980	42	38		0.0018011	-0.0067936	42	39		0.0024849	0.0089295
42	40		0.0019980	-0.0027079	42	41		-0.0001768	0.0009606	42	42		-0.0063007	0.0022353
43	1		-0.0008316	0.0020286	43	2		-0.0056119	-0.0006628	43	3		0.0031178	0.0007431
43	4		0.0019077	-0.0006349	43	5		-0.0070054	0.0026595	43	6		0.0050181	0.0041881
43	7		-0.0016264	-0.0010956	43	8		-0.0008173	0.0041930	43	9		-0.0025299	-0.0053650
43	10		0.0000195	-0.0005122	43	11		-0.0027799	0.0039610	43	12		-0.0013027	0.0001380
43	13		0.0024777	-0.0028463	43	14		-0.0022186	0.0014669	43	15		0.0025039	0.0060175
43	16		0.0012199	0.0007061	43	17		0.0003756	-0.0009282	43	18		-0.0002852	-0.0039074
43	19		-0.0060716	-0.0032356	43	20		-0.0003431	0.0016274	43	21		0.0009576	0.0061367
43	22		0.0019677	-0.0000828	43	23		0.0001647	-0.0064914	43	24		0.0020583	0.0023257
43	25		-0.0014060	0.0002575	43	26		-0.0021524	0.0016623	43	27		0.0040223	0.0010344
43	28		-0.0016798	0.0071065	43	29		-0.0010411	0.0008117	43	30		-0.0079572	-0.0061139
43	31		-0.0033059	-0.0019594	43	32		-0.0026257	0.0050419	43	33		0.0033950	-0.0020095
43	34		0.0028516	-0.0021425	43	35		-0.0016056	0.0051703	43	36		-0.0012074	-0.0011083
43	37		0.0029798	0.0030621	43	38		-0.0031235	0.0005426	43	39		0.0027912	0.0005902
43	40		0.0073136	-0.0003218	43	41		-0.0024349	0.0013503	43	42		-0.0045843	0.0035128
43	43		-0.0011373	-0.0064975										
44	1		0.0029297	0.0011940	44	2		0.0010687	0.0032316	44	3		-0.0002384	-0.0036957
44	4		0.0018471	0.0012678	44	5		0.0034121	0.0017682	44	6		-0.0038622	0.0025786
44	7		0.0013370	-0.0075225	44	8		-0.0018939	0.0016363	44	9		0.0002772	-0.0035145
44	10		-0.0024947	-0.0021794	44	11		0.0012324	-0.0000826	44	12		-0.0003520	-0.0006908
44	13		0.0016425	-0.0016159	44	14		-0.0009325	-0.0043967	44	15		0.0001944	-0.0044618
44	16		0.0039739	0.0025995	44	17		0.0018932	0.0029772	44	18		0.0026380	-0.0025727
44	19		-0.0009661	-0.0023623	44	20		-0.0033284	-0.0017765	44	21		-0.0077975	-0.0000412
44	22		0.0038111	0.0014278	44	23		-0.0000186	0.0044105	44	24		0.0006760	-0.0032237
44	25		-0.0006909	-0.0005947	44	26		-0.0026699	-0.0003930	44	27		0.0038838	-0.0032201
44	28		-0.0016089	0.0027245	44	29		-0.0051754	0.0032688	44	30		0.0042510	0.0020496
44	31		-0.0009448	0.0033906	44	32		-0.0031967	0.0009834	44	33		-0.0029287	-0.0003965
44	34		-0.0028548	0.0028183	44	35		-0.0040191	-0.0027811	44	36		0.0003855	-0.0061805
44	37		0.0078193	0.0055376	44	38		0.0030486	-0.0050440	44	39		0.0053568	0.0019902
44	40		-0.0022656	0.0049728	44	41		0.0004467	0.0001770	44	42		-0.0026354	-0.0019834
44	43		0.0035684	-0.0032760	44	44		0.0037782	-0.0006886					
45	1		0.0026951	-0.0027440	45	2		0.0000148	-0.0017983	45	3		-0.0007616	-0.0023328
45	4		0.0002985	-0.0012819	45	5		0.0035373	-0.0005212	45	6		-0.0014242	0.0009479
45	7		-0.0008588	0.0015494	45	8		-0.0031837	0.0012239	45	9		0.0015806	-0.0015151
45	10		0.0002887	0.0015372	45	11		0.0001222	-0.0004875	45	12		-0.0021671	-0.0010538
45	13		-0.0034052	-0.0008497	45	14		0.0007696	-0.0037004	45	15		-0.0026414	0.0016431
45	16		0.0032011	-0.0003423	45	17		0.0020754	-0.0006589	45	18		0.0004705	-0.0043553
45	19		-0.0043586	-0.0023125	45	20		0.0021153	0.0009336	45	21		-0.0034361	-0.0013003
45	22		0.0024224	0.0019235	45	23		0.0002953	0.0000911	45	24		-0.0057726	0.0034637
45	25		0.0041370	-0.0030598	45	26		-0.0007239	0.0031661	45	27		-0.0042952	-0.0002781



Index			Value		Index			Value		Index			Value	
n	m		C	S	n	m		C	S	n	m		C	S
45	28		0.0062681	-0.0008717	45	29		-0.0059262	-0.0033256	45	30		-0.0000580	-0.0003571
45	31		-0.0017040	-0.0018854	45	32		-0.0020496	-0.0030384	45	33		-0.0030386	-0.0017780
45	34		-0.0003018	0.0033467	45	35		-0.0036964	0.0054399	45	36		-0.0056363	0.0065188
45	37		-0.0066606	0.0032181	45	38		-0.0032027	0.0037589	45	39		-0.0038397	-0.0046705
45	40		0.0007054	-0.0033151	45	41		0.0016370	-0.0013952	45	42		-0.0027772	-0.0081510
45	43		0.0006000	0.0030227	45	44		0.0084758	0.0004522	45	45		-0.0005275	0.0001983
46	1		0.0003902	0.0019348	46	2		0.0039107	0.0003363	46	3		-0.0015697	0.0003988
46	4		0.0016600	-0.0049421	46	5		-0.0027228	-0.0029434	46	6		-0.0031675	-0.0015616
46	7		0.0020442	-0.0053048	46	8		-0.0002472	0.0023184	46	9		0.0048027	0.0043677
46	10		-0.0005557	0.0010901	46	11		-0.0025667	-0.0015273	46	12		-0.0002748	0.0009639
46	13		-0.0015386	-0.0006741	46	14		0.0003575	0.0006596	46	15		-0.0028107	-0.0010545
46	16		0.0006898	0.0023582	46	17		-0.0034898	-0.0005418	46	18		0.0022656	-0.0029780
46	19		-0.0002686	-0.0023467	46	20		-0.0021061	-0.0041320	46	21		-0.0052484	0.0014604
46	22		0.0063494	0.0008493	46	23		0.0012049	0.0010192	46	24		-0.0001629	-0.0017623
46	25		0.0028610	-0.0050933	46	26		0.0029405	0.0080656	46	27		-0.0011910	0.0001431
46	28		-0.0001483	-0.0055951	46	29		-0.0016279	-0.0022368	46	30		-0.0028077	-0.0057572
46	31		-0.0020010	0.0002963	46	32		-0.0021572	-0.0005208	46	33		0.0109984	0.0002125
46	34		-0.0017368	0.0025661	46	35		-0.0043511	0.0001382	46	36		0.0002680	-0.0011718
46	37		-0.0028315	0.0028776	46	38		-0.0053348	-0.0027991	46	39		0.0055427	-0.0007327
46	40		0.0006478	0.0002631	46	41		-0.0011737	-0.0022143	46	42		-0.0009337	0.0050951
46	43		-0.0022300	0.0103393	46	44		0.0001587	-0.0016435	46	45		-0.0027172	0.0031762
46	46		0.0005050	-0.0020583										
47	1		-0.0053435	-0.0007635	47	2		0.0016198	0.0000823	47	3		0.0009059	0.0023499
47	4		-0.0017473	0.0002132	47	5		-0.0012637	-0.0022936	47	6		0.0013596	-0.0012630
47	7		0.0001166	-0.0040506	47	8		0.0008843	-0.0008776	47	9		-0.0011285	0.0017593
47	10		0.0019215	0.0015586	47	11		0.0008545	-0.0027904	47	12		0.0058705	0.0016457
47	13		-0.0027401	-0.0010902	47	14		0.0002416	0.0010597	47	15		-0.0014275	-0.0001426
47	16		-0.0017942	-0.0005419	47	17		-0.0017814	0.0024817	47	18		-0.0006259	0.0068878
47	19		0.0025376	0.0012821	47	20		-0.0065500	0.0006051	47	21		-0.0039365	-0.0010039
47	22		-0.0040330	0.0007903	47	23		0.0026870	0.0008748	47	24		-0.0007888	-0.0013627
47	25		-0.0016422	-0.0064498	47	26		0.0050061	-0.0007265	47	27		-0.0037071	-0.0028474
47	28		0.0019022	-0.0060338	47	29		0.0053198	0.0005651	47	30		-0.0014446	0.0029410
47	31		0.0007062	0.0024173	47	32		-0.0026391	0.0011748	47	33		-0.0042830	0.0021022
47	34		-0.0008726	0.0006783	47	35		-0.0039723	0.0003526	47	36		0.0058505	-0.0021634
47	37		0.0074399	0.0019451	47	38		0.0007072	-0.0011637	47	39		-0.0005401	0.0065295
47	40		-0.0080805	0.0041903	47	41		-0.0018862	0.0077747	47	42		-0.0022845	-0.0014633
47	43		-0.0014626	0.0011128	47	44		-0.0020330	0.0057069	47	45		0.0054800	0.0027301
47	46		-0.0019032	-0.0015629	47	47		0.0024330	-0.0034586					
48	1		0.0005538	0.0012148	48	2		0.0035724	0.0015917	48	3		-0.0006864	-0.0003342
48	4		-0.0007062	-0.0007040	48	5		0.0044193	0.0004521	48	6		0.0030947	0.0036867
48	7		-0.0014992	0.0018387	48	8		0.0004006	0.0012714	48	9		0.0006931	0.0021397
48	10		-0.0015349	0.0015451	48	11		0.0026793	0.0005879	48	12		0.0001334	-0.0019480
48	13		0.0018516	0.0001842	48	14		-0.0004517	0.0002950	48	15		0.0031099	0.0004613
48	16		0.0009952	0.0013374	48	17		0.0008646	0.0005053	48	18		-0.0007917	0.0022628
48	19		-0.0009128	0.0023804	48	20		-0.0013079	0.0041606	48	21		0.0021234	-0.0008577
48	22		-0.0037062	0.0036039	48	23		-0.0030785	-0.0005105	48	24		-0.0044177	-0.0010251
48	25		-0.0004567	0.0001535	48	26		-0.0011981	-0.0039966	48	27		-0.0053468	0.0042815
48	28		0.0013954	-0.0050730	48	29		0.0022356	-0.0043115	48	30		-0.0016900	-0.0007810
48	31		0.0001248	-0.0017717	48	32		0.0010593	-0.0007825	48	33		0.0004008	0.0009590
48	34		-0.0009807	0.0040984	48	35		-0.0027110	-0.0007886	48	36		-0.0017322	0.0013982
48	37		-0.0031590	0.0001357	48	38		-0.0079164	-0.0003110	48	39		0.0021019	-0.0070046
48	40		0.0019652	0.0016491	48	41		-0.0026586	-0.0096586	48	42		0.0012291	0.0026088
48	43		0.0034306	0.0042050	48	44		-0.0000205	-0.0015323	48	45		0.0049022	0.0011523
48	46		-0.0020915	0.0067677	48	47		0.0030068	0.0051068	48	48		0.0041556	-0.0019210
49	1		0.0043368	0.0000709	49	2		0.0010682	0.0042526	49	3		-0.0001052	-0.0001249
49	4		0.0009678	0.0066156	49	5		0.0007732	-0.0003730	49	6		-0.0006717	0.0001671
49	7		0.0015788	0.0023319	49	8		-0.0021954	0.0026171	49	9		-0.0017627	0.0032456
49	10		-0.0034344	-0.0006411	49	11		0.0044174	-0.0000399	49	12		-0.0033296	-0.0015868
49	13		0.0013113	0.0018309	49	14		0.0003211	-0.0007456	49	15		-0.0005472	-0.0009267
49	16		0.0002820	-0.0036641	49	17		-0.0018398	-0.0003205	49	18		-0.0003905	-0.0005100
49	19		-0.0017828	-0.0007865	49	20		0.0038187	0.0000889	49	21		-0.0010906	-0.0030666
49	22		-0.0009327	0.0038366	49	23		0.0017917	0.0007186	49	24		0.0025186	0.0003714
49	25		-0.0018632	0.0023003	49	26		-0.0061364	0.0010063	49	27		-0.0023229	0.0031887
49	28		-0.0027142	-0.0090119	49	29		-0.0002811	0.0011873	49	30		0.0016574	0.0016788
49	31		0.0005052	-0.0058855	49	32		0.0011389	-0.0050365	49	33		0.0010842	-0.0009892
49	34		0.0036489	0.0000702	49	35		0.0022276	0.0022634	49	36		-0.0019451	0.0022716
49	37		-0.0019750	0.0020364	49	38		0.0011548	-0.0001104	49	39		0.0017274	0.0000864

Index		Value		Index		Value		Index		Value	
<u>n</u>	<u>m</u>	<u>C</u>	<u>S</u>	<u>n</u>	<u>m</u>	<u>C</u>	<u>S</u>	<u>n</u>	<u>m</u>	<u>C</u>	<u>S</u>
49	40	-0.0019194	0.0010767	49	41	0.0017339	-0.0057150	49	42	-0.0034542	0.0018620
49	43	0.0032430	-0.0077262	49	44	0.0057092	0.0051676	49	45	0.0037451	-0.0008910
49	46	0.0019567	0.0005388	49	47	0.0023910	-0.0013929	49	48	0.0000523	0.0009792
49	49	0.0022866	0.0011051								
50	1	0.0017666	-0.0022281	50	2	-0.0058765	-0.0036022	50	3	0.0004426	-0.0008402
50	4	-0.0047777	0.0001146	50	5	-0.0019977	0.0002767	50	6	0.0000882	0.0003448
50	7	0.0025973	0.0024513	50	8	-0.0032385	-0.0013418	50	9	-0.0010077	0.0018888
50	10	-0.0033841	-0.0007892	50	11	-0.0010069	0.0016175	50	12	-0.0029256	0.0039480
50	13	0.0009021	-0.0004416	50	14	-0.0026214	0.0027302	50	15	-0.0014314	-0.0022591
50	16	-0.0007214	-0.0052738	50	17	-0.0000520	-0.0018828	50	18	0.0011816	-0.0023998
50	19	0.0011347	0.0018687	50	20	0.0015556	-0.0011293	50	21	0.0000305	-0.0001589
50	22	-0.0004390	0.0004109	50	23	-0.0028784	-0.0042220	50	24	0.0058694	-0.0003756
50	25	0.0048968	0.0001811	50	26	-0.0054587	-0.0016869	50	27	0.0043118	-0.0016602
50	28	-0.0006827	0.0052310	50	29	0.0047011	0.0029798	50	30	0.0034870	0.0054217
50	31	-0.0028706	0.0041099	50	32	-0.0010662	0.0014943	50	33	-0.0025429	-0.0017283
50	34	-0.0014786	-0.0012403	50	35	0.0003762	0.0005054	50	36	-0.0002935	0.0006947
50	37	-0.0010860	-0.0002919	50	38	-0.0026838	-0.0055295	50	39	-0.0045147	0.0060185
50	40	0.0044884	0.0040792	50	41	-0.0007966	-0.0009059	50	42	0.0044166	-0.0017972
50	43	-0.0022517	-0.0008207	50	44	-0.0015030	-0.0013688	50	45	-0.0022066	0.0033629
50	46	-0.0019619	0.0021132	50	47	-0.0056726	-0.0081046	50	48	-0.0010699	-0.0019044
50	49	0.0025218	-0.0049950	50	50	0.0023135	0.0019352				