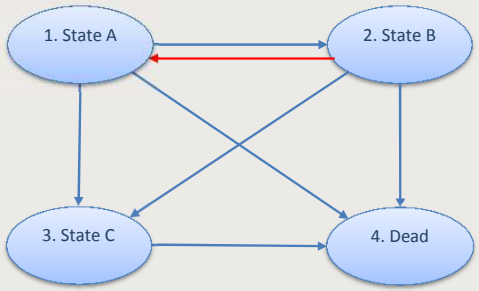
Supplementary file to accompany Jones, Epstein, Garcia-Mochon "A procedure for deriving formulas to convert transition rates to probabilities for multi-state Markov models"

Model 3. Four-state model with all forward transition and one backward transition



Matrix Q

	State A	State B	State C	Dead
State A	-0.006	0.0030	0.0006	0.0023
State B	0.05321	-0.002	0.00099	0.00100
State C	0	0	0.00	0.00102
Dead	0	0	0	0

Matrix D

	State A	State B	State C	Dead
State A	-0.003	0	0	0
State B	0	-0.0582	0	0
State C	0	0	-0.0010	0
Dead	0	0	0	0

Matrix U

	State A	State B	State C	Dead
State A	0.0060	0.0060	0.0000	-0.0002
State B	0.0061	-0.1046	0.0000	-0.0002
State C	0.0000	0.0000	-0.0001	-0.0002
Dead	0.0000	0.0000	0.0000	-0.0002

Matrix U^(-1)

	State A	State B	State C	Dead
State A	157.7162	9.0333	-56.6521	-110.0974
State B	9.1897	-9.0333	0.0579	-0.2143
State C	0.0000	0.0000	-9322.6497	9322.6497
Dead	0.0000	0.0000	0.0000	-5921.5878

	Transition rates										*Transition probabilities*					
	From State A to ...				From State B to ...				From State C to Dead		From State A to ...				From St	
	State A	State B	State B	Dead	State A	State B	State C	Dead	State C	Dead	State A	State B	State C	Dead	State A	State B
Cycle	a	b	c	d	f	g	h	i	-j	j						
0																
1	-0.00595	0.0030	0.0006	0.0023	0.05321	-0.05520	0.00099	0.00100	0.00	0.00102	0.9941	0.0029	0.0006	0.0023	0.0516	0.9464
2	-0.00717	0.0037	0.0008	0.0027	0.05743	-0.06024	0.00181	0.00100	0.00	0.00278	0.9930	0.0036	0.0008	0.0027	0.0555	0.9416
3	-0.00836	0.0044	0.0009	0.0030	0.06032	-0.06375	0.00243	0.00100	0.00	0.00350	0.9918	0.0042	0.0009	0.0030	0.0582	0.9384
4	-0.00953	0.0051	0.0011	0.0034	0.06236	-0.06643	0.00307	0.00100	0.00	0.00440	0.9907	0.0049	0.0011	0.0034	0.0601	0.9359
5	-0.01070	0.0057	0.0013	0.0037	0.06398	-0.06879	0.00381	0.00100	-0.01	0.00529	0.9895	0.0055	0.0013	0.0037	0.0615	0.9337
6	-0.01190	0.0064	0.0015	0.0040	0.06543	-0.07106	0.00463	0.00100	-0.01	0.00612	0.9884	0.0061	0.0015	0.0040	0.0628	0.9316
7	-0.01316	0.0071	0.0017	0.0044	0.06684	-0.07334	0.00550	0.00100	-0.01	0.00703	0.9872	0.0068	0.0017	0.0044	0.0640	0.9295
8	-0.01450	0.0078	0.0019	0.0048	0.06827	-0.07568	0.00640	0.00100	-0.01	0.00797	0.9859	0.0075	0.0019	0.0048	0.0653	0.9274
9	-0.01590	0.0086	0.0021	0.0053	0.06963	-0.07795	0.00731	0.00100	-0.01	0.00950	0.9845	0.0082	0.0021	0.0052	0.0665	0.9253
10	-0.01735	0.0093	0.0023	0.0057	0.07075	-0.07998	0.00822	0.00100	-0.01	0.01123	0.9831	0.0089	0.0023	0.0057	0.0674	0.9234
11	-0.01885	0.0100	0.0026	0.0062	0.07147	-0.08158	0.00912	0.00100	-0.01	0.01230	0.9817	0.0095	0.0026	0.0062	0.0680	0.9220
12	-0.02040	0.0108	0.0029	0.0068	0.07167	-0.08266	0.00999	0.00100	-0.01	0.01389	0.9802	0.0102	0.0029	0.0067	0.0681	0.9210
13	-0.02199	0.0115	0.0032	0.0073	0.07133	-0.08319	0.01085	0.00100	-0.01	0.01452	0.9786	0.0109	0.0032	0.0073	0.0677	0.9206
14	-0.02365	0.0123	0.0035	0.0079	0.07052	-0.08323	0.01172	0.00100	-0.01	0.01480	0.9770	0.0116	0.0035	0.0078	0.0669	0.9205
15	-0.02539	0.0130	0.0038	0.0085	0.06934	-0.08294	0.01261	0.00100	-0.02	0.01521	0.9754	0.0123	0.0038	0.0085	0.0657	0.9208
16	-0.02721	0.0138	0.0042	0.0092	0.06796	-0.08249	0.01354	0.00100	-0.02	0.01673	0.9736	0.0131	0.0042	0.0091	0.0643	0.9213
17	-0.02913	0.0145	0.0046	0.0100	0.06649	-0.08204	0.01456	0.00100	-0.02	0.01862	0.9718	0.0138	0.0046	0.0099	0.0629	0.9217
18	-0.03115	0.0153	0.0050	0.0109	0.06506	-0.08177	0.01571	0.00100	-0.02	0.02012	0.9698	0.0145	0.0050	0.0108	0.0615	0.9219
19	-0.03333	0.0160	0.0054	0.0118	0.06381	-0.08182	0.01701	0.00100	-0.02	0.02253	0.9677	0.0151	0.0054	0.0117	0.0603	0.9219
20	-0.03569	0.0168	0.0059	0.0130	0.06276	-0.08224	0.01848	0.00100	-0.03	0.02528	0.9654	0.0158	0.0059	0.0128	0.0592	0.9215
21	-0.03825	0.0175	0.0064	0.0143	0.06204	-0.08314	0.02010	0.00100	-0.03	0.02829	0.9630	0.0165	0.0064	0.0141	0.0584	0.9207
22	-0.04098	0.0182	0.0070	0.0158	0.06176	-0.08462	0.02185	0.00100	-0.03	0.03074	0.9604	0.0171	0.0070	0.0156	0.0580	0.9194
23	-0.04390	0.0188	0.0077	0.0174	0.06186	-0.08659	0.02372	0.00100	-0.03	0.03219	0.9576	0.0176	0.0076	0.0172	0.0580	0.9176
24	-0.04700	0.0192	0.0085	0.0193	0.06229	-0.08899	0.02571	0.00100	-0.03	0.03344	0.9547	0.0180	0.0084	0.0190	0.0582	0.9154
25	-0.05035	0.0196	0.0094	0.0213	0.06314	-0.09194	0.02780	0.00100	-0.03	0.03435	0.9515	0.0182	0.0093	0.0210	0.0588	0.9127
26	-0.05397	0.0198	0.0106	0.0237	0.06476	-0.09577	0.03001	0.00100	-0.04	0.03513	0.9481	0.0183	0.0104	0.0232	0.0601	0.9093
27	-0.05784	0.0198	0.0118	0.0262	0.06733	-0.10068	0.03235	0.00100	-0.04	0.03596	0.9444	0.0183	0.0116	0.0257	0.0622	0.9048
28	-0.06194	0.0197	0.0133	0.0289	0.07094	-0.10679	0.03484	0.00100	-0.04	0.03710	0.9406	0.0182	0.0130	0.0283	0.0652	0.8994
29	-0.06629	0.0195	0.0149	0.0319	0.07574	-0.11423	0.03749	0.00100	-0.04	0.03868	0.9365	0.0179	0.0144	0.0312	0.0692	0.8927
30	-0.07092	0.0192	0.0166	0.0351	0.08182	-0.12312	0.04030	0.00100	-0.04	0.03995	0.9323	0.0174	0.0161	0.0342	0.0743	0.8849
31	-0.07585	0.0187	0.0185	0.0386	0.08934	-0.13359	0.04325	0.00100	-0.04	0.04055	0.9277	0.0169	0.0179	0.0375	0.0805	0.8757
32	-0.08113	0.0181	0.0207	0.0424	0.09842	-0.14573	0.04631	0.00100	-0.04	0.04169	0.9229	0.0162	0.0198	0.0411	0.0879	0.8652
33	-0.08679	0.0173	0.0230	0.0465	0.10912	-0.15963	0.04950	0.00100	-0.05	0.04516	0.9177	0.0153	0.0219	0.0450	0.0965	0.8533
34	-0.09287	0.0163	0.0256	0.0509	0.12147	-0.17529	0.05281	0.00100	-0.05	0.04795	0.9122	0.0143	0.0243	0.0493	0.1063	0.8401
35	-0.09937	0.0150	0.0286	0.0558	0.13550	-0.19269	0.05620	0.00100	-0.05	0.05265	0.9063	0.0130	0.0269	0.0538	0.1172	0.8256
36	-0.10631	0.0134	0.0319	0.0609	0.15135	-0.21195	0.05960	0.00100	-0.06	0.06079	0.9000	0.0115	0.0297	0.0588	0.1292	0.8099
37	-0.11373	0.0114	0.0358	0.0665	0.16945	-0.23340	0.06295	0.00100	-0.07	0.06839	0.8933	0.0096	0.0330	0.0641	0.1426	0.7926
38	-0.12178	0.0089	0.0403	0.0726	0.19042	-0.25763	0.06621	0.00100	-0.08	0.08177	0.8861	0.0074	0.0366	0.0699	0.1577	0.7736

Matrix Exp(D)

	State A	State B	State C	Dead
State A	0.9971	0.0000	0.0000	0.0000
State B	0.0000	0.9434	0.0000	0.0000
State C	0.0000	0.0000	0.9990	0.0000
Dead	0.0000	0.0000	0.0000	1.0000

Matrix P(1) = U * Exp(D) * U^(-1)

	State A	State B	State C	Dead
State A	0.9941	0.0029	0.0006	0.0023
State B	0.0516	0.9464	0.0010	0.0010
State C	0.0000	0.0000	0.9990	0.0010
Dead	0.0000	0.0000	0.0000	1.0000

ate B to ...		From State C to Dead	
State C	Dead	State C	Dead
0.0010	0.0010	0.9990	0.0010
0.0018	0.0010	0.9972	0.0028
0.0024	0.0011	0.9965	0.0035
0.0030	0.0011	0.9956	0.0044
0.0037	0.0011	0.9947	0.0053
0.0045	0.0011	0.9939	0.0061
0.0053	0.0011	0.9930	0.0070
0.0062	0.0011	0.9921	0.0079
0.0071	0.0012	0.9905	0.0095
0.0079	0.0012	0.9888	0.0112
0.0088	0.0012	0.9878	0.0122
0.0096	0.0013	0.9862	0.0138
0.0104	0.0013	0.9856	0.0144
0.0113	0.0013	0.9853	0.0147
0.0121	0.0013	0.9849	0.0151
0.0130	0.0014	0.9834	0.0166
0.0140	0.0014	0.9815	0.0185
0.0151	0.0015	0.9801	0.0199
0.0163	0.0015	0.9777	0.0223
0.0177	0.0016	0.9750	0.0250
0.0192	0.0017	0.9721	0.0279
0.0208	0.0018	0.9697	0.0303
0.0226	0.0018	0.9683	0.0317
0.0244	0.0019	0.9671	0.0329
0.0264	0.0021	0.9662	0.0338
0.0284	0.0022	0.9655	0.0345
0.0306	0.0023	0.9647	0.0353
0.0329	0.0025	0.9636	0.0364
0.0353	0.0028	0.9621	0.0379
0.0378	0.0031	0.9608	0.0392
0.0404	0.0034	0.9603	0.0397
0.0431	0.0038	0.9592	0.0408
0.0459	0.0043	0.9558	0.0442
0.0487	0.0049	0.9532	0.0468
0.0515	0.0057	0.9487	0.0513
0.0542	0.0068	0.9410	0.0590
0.0569	0.0079	0.9339	0.0661
0.0593	0.0095	0.9215	0.0785

State transition model (Markov trace)				Check
State A	State B	State C	Dead	
1.000	0.000	0.000		1.00
0.994	0.003	0.001	0.002329516	1.00
0.987	0.006	0.001	0.005015201	1.00
0.980	0.010	0.002	0.008024343	1.00
0.971	0.014	0.003	0.011336107	1.00
0.962	0.019	0.005	0.014943675	1.00
0.952	0.023	0.006	0.018855907	1.00
0.941	0.028	0.008	0.023097331	1.00
0.930	0.033	0.010	0.027697964	1.00
0.917	0.038	0.012	0.03268983	1.00
0.904	0.043	0.014	0.038099636	1.00
0.891	0.049	0.017	0.043935395	1.00
0.876	0.054	0.019	0.050213742	1.00
0.861	0.059	0.022	0.056925242	1.00
0.846	0.065	0.026	0.064077185	1.00
0.829	0.070	0.029	0.071699085	1.00
0.812	0.075	0.033	0.079858543	1.00
0.793	0.080	0.038	0.088614177	1.00
0.774	0.086	0.042	0.09800792	1.00
0.755	0.091	0.047	0.108149755	1.00
0.734	0.096	0.052	0.119149098	1.00
0.712	0.100	0.057	0.131114299	1.00
0.690	0.104	0.062	0.144098874	1.00
0.667	0.108	0.068	0.158107479	1.00
0.643	0.111	0.074	0.173189269	1.00
0.618	0.113	0.080	0.189391764	1.00
0.593	0.114	0.087	0.206753385	1.00
0.567	0.114	0.094	0.225299715	1.00
0.541	0.113	0.102	0.245060703	1.00
0.514	0.110	0.110	0.266076986	1.00
0.487	0.106	0.118	0.288307788	1.00
0.461	0.101	0.126	0.311651875	1.00
0.434	0.095	0.135	0.336140893	1.00
0.408	0.088	0.143	0.362046	1.00
0.381	0.080	0.150	0.389227421	1.00
0.355	0.071	0.157	0.417888656	1.00
0.328	0.061	0.162	0.448452711	1.00
0.302	0.052	0.165	0.480678836	1.00
0.276	0.042	0.167	0.515282841	1.00

Intermediate variables

U=						
m	n	o	p	q	r	s
0.0060	0.0000	-0.0002	0.0060951	-0.1046059	0.0000	-0.0002
0.0074	-0.0001	-0.0002	0.0074574	-0.1135968	-0.0001	-0.0002
0.0088	-0.0001	-0.0003	0.0088261	-0.1195943	-0.0001	-0.0003
0.0101	-0.0001	-0.0003	0.0101647	-0.1239675	-0.0001	-0.0003
0.0114	-0.0001	-0.0004	0.0114742	-0.1276544	-0.0001	-0.0004
0.0128	-0.0001	-0.0004	0.0127783	-0.1310971	-0.0001	-0.0004
0.0142	-0.0001	-0.0005	0.0141093	-0.1344783	-0.0001	-0.0005
0.0156	-0.0002	-0.0006	0.0154866	-0.1378468	-0.0002	-0.0006
0.0171	-0.0002	-0.0006	0.0169013	-0.1410031	-0.0002	-0.0006
0.0186	-0.0002	-0.0007	0.0183275	-0.1435779	-0.0002	-0.0007
0.0201	-0.0003	-0.0008	0.0197581	-0.1452255	-0.0002	-0.0008
0.0216	-0.0003	-0.0009	0.0212044	-0.1457376	-0.0003	-0.0009
0.0231	-0.0003	-0.0010	0.0226694	-0.1450618	-0.0003	-0.0010
0.0246	-0.0004	-0.0011	0.0241575	-0.1433309	-0.0003	-0.0011
0.0261	-0.0004	-0.0012	0.0256699	-0.1407819	-0.0004	-0.0012
0.0276	-0.0005	-0.0013	0.0272014	-0.1377628	-0.0004	-0.0013
0.0291	-0.0005	-0.0014	0.0287335	-0.1345599	-0.0005	-0.0014
0.0306	-0.0005	-0.0016	0.0302586	-0.1314934	-0.0005	-0.0016
0.0321	-0.0006	-0.0017	0.0317933	-0.1287699	-0.0005	-0.0017
0.0336	-0.0006	-0.0019	0.0333265	-0.1264127	-0.0006	-0.0019
0.0350	-0.0007	-0.0021	0.0348407	-0.1246341	-0.0006	-0.0021
0.0363	-0.0008	-0.0023	0.0363123	-0.1235807	-0.0007	-0.0023
0.0375	-0.0009	-0.0026	0.0377097	-0.1230829	-0.0008	-0.0026
0.0385	-0.0010	-0.0030	0.0389767	-0.1229627	-0.0009	-0.0030
0.0391	-0.0011	-0.0034	0.0400952	-0.1232808	-0.0010	-0.0034
0.0395	-0.0012	-0.0039	0.0410615	-0.1246689	-0.0012	-0.0039
0.0396	-0.0014	-0.0045	0.041851	-0.1275332	-0.0015	-0.0045
0.0395	-0.0016	-0.0052	0.0424148	-0.1321054	-0.0018	-0.0052
0.0391	-0.0019	-0.0061	0.0427113	-0.1385879	-0.0022	-0.0061
0.0384	-0.0022	-0.0072	0.0427089	-0.1471155	-0.0026	-0.0072
0.0374	-0.0025	-0.0085	0.0423814	-0.1578542	-0.0032	-0.0085
0.0362	-0.0030	-0.0100	0.0416914	-0.1708982	-0.0039	-0.0100
0.0346	-0.0035	-0.0120	0.0405644	-0.1862354	-0.0046	-0.0120
0.0326	-0.0041	-0.0143	0.0388937	-0.2037247	-0.0055	-0.0143
0.0301	-0.0048	-0.0171	0.0365237	-0.2231651	-0.0065	-0.0171
0.0269	-0.0056	-0.0205	0.033248	-0.2445254	-0.0075	-0.0205
0.0228	-0.0066	-0.0246	0.0288315	-0.2681583	-0.0089	-0.0246
0.0178	-0.0077	-0.0297	0.0230457	-0.2947543	-0.0103	-0.0297

		Uinverse											D					
u	v	aa	bb	cc	dd	ff	gg	hh	ii	jj	kk	ll	k	l	-j	expk	expl	**exp_j**
-0.0001	-0.0002	157.7162	9.0333371	-56.652086	-110.09742	9.1897335	-9.0333371	0.0578589	-0.2142553	-9322.6497	9322.6497	-5921.5878	-0.0028991	-0.0582497	-0.0010247	0.9971051	0.9434144	0.9989758
0.0000	-0.0002	127.2333	8.2607656	-171.40237	35.908322	8.3525837	-8.2607656	0.1380277	-0.2298457	-24573.614	24573.614	-4543.3596	-0.0034408	-0.0639679	-0.0027758	0.9965651	0.9380351	0.9972281
0.0000	-0.0003	106.4286	7.7869271	-267.52357	153.30799	7.8544551	-7.7869271	0.1782726	-0.2458006	-34690.673	34690.673	-3714.4984	-0.0039498	-0.0681599	-0.0035039	0.996058	0.9341111	0.9965022
0.0000	-0.0003	91.4832	7.455329	-2697.2575	2598.3189	7.501172	-7.455329	0.2167499	-0.2625929	-322662.96	322662.96	-3141.8114	-0.0044505	-0.0715167	-0.0044044	0.9955593	0.9309808	0.9956053
0.0000	-0.0004	80.1600	7.1875903	399.95985	-487.30747	7.2052001	-7.1875903	0.2616258	-0.2792356	44303.03	-44303.03	-2702.4944	-0.0049649	-0.0745292	-0.0052909	0.9950474	0.9281804	0.9947231
0.0000	-0.0004	71.1785	6.950458	226.12967	-304.25866	6.937919	-6.950458	0.3083801	-0.2958411	23202.289	-23202.289	-2342.7054	-0.0055114	-0.0774492	-0.0061156	0.9945037	0.9254741	0.993903
0.0001	-0.0005	63.7660	6.7300364	154.97402	-225.47007	6.690255	-6.7300364	0.3533196	-0.3135383	14775.552	-14775.552	-2037.1131	-0.0061056	-0.0803995	-0.0070281	0.993913	0.9227477	0.9929966
0.0001	-0.0006	57.5014	6.5217368	122.60249	-186.62567	6.4600808	-6.5217368	0.393707	-0.332051	10899.973	-10899.973	-1775.4601	-0.0067519	-0.0834186	-0.0079678	0.9932708	0.919966	0.9920638
0.0002	-0.0006	52.1848	6.3329491	75.359665	-133.8774	6.2551023	-6.3329491	0.4327194	-0.3548726	6318.4436	-6318.4436	-1554.3053	-0.0074466	-0.0863987	-0.0095048	0.9925811	0.9172284	0.9905402
0.0002	-0.0007	47.6877	6.1764466	53.137977	-107.00216	6.087266	-6.1764466	0.4708059	-0.3816253	4225.6894	-4225.6894	-1370.0346	-0.0081883	-0.0891409	-0.0112255	0.9918452	0.9147166	0.9888373
0.0003	-0.0008	43.8468	6.0612099	50.455443	-100.36346	5.9654044	-6.0612099	0.5043448	-0.4085393	3791.3625	-3791.3625	-1218.6221	-0.0089719	-0.0914636	-0.0123038	0.9910683	0.9125945	0.9877716
0.0003	-0.0009	40.4916	5.9901056	42.776557	-89.2583	5.8914122	-5.9901056	0.5425571	-0.4438638	3073.1545	-3073.1545	-1094.7649	-0.009794	-0.093265	-0.0138937	0.9902538	0.9109521	0.9862024
0.0003	-0.0010	37.5198	5.9619207	47.339584	-90.821326	5.8633735	-5.9619207	0.5776208	-0.4790736	3231.69	-3231.69	-992.91214	-0.0106552	-0.0945208	-0.0145233	0.9894014	0.9098088	0.9855817
0.0003	-0.0011	34.8564	5.9705592	59.209381	-100.03632	5.8748281	-5.9705592	0.614809	-0.5190779	3843.1674	-3843.1674	-906.93277	-0.0115684	-0.0953127	-0.0148003	0.9884982	0.9090886	0.9853087
0.0002	-0.0012	32.4547	6.0077425	75.126807	-113.58922	5.9177285	-6.0077425	0.6583736	-0.5683596	4658.8909	-4658.8909	-831.9152	-0.0125505	-0.0957765	-0.0152149	0.9875279	0.9086671	0.9849003
0.0002	-0.0013	30.2887	6.0619198	67.102753	-103.45335	5.9805317	-6.0619198	0.7168607	-0.6354727	4036.5611	-4036.5611	-764.60345	-0.0136105	-0.0960926	-0.0167321	0.9864817	0.9083799	0.9834071
0.0003	-0.0014	28.3398	6.1239473	56.772521	-91.236312	6.0515992	-6.1239473	0.7882991	-0.715951	3326.6249	-3326.6249	-702.75049	-0.0147602	-0.0964068	-0.0186249	0.9853482	0.9080945	0.9815475
0.0003	-0.0016	26.5871	6.1823003	56.267089	-89.036472	6.118093	-6.1823003	0.8656968	-0.8014896	3182.5409	-3182.5409	-643.98273	-0.016025	-0.096901	-0.0201172	0.9841027	0.9076458	0.9800838
0.0004	-0.0017	24.9989	6.2280756	47.484226	-78.711173	6.1722266	-6.2280756	0.9622997	-0.9064506	2608.7596	-2608.7596	-586.91627	-0.0174361	-0.0977178	-0.0225347	0.982715	0.9069048	0.9777173
0.0005	-0.0019	23.5771	6.260206	40.828119	-70.665405	6.2156819	-6.260206	1.0715002	-1.0269762	2172.3146	-2172.3146	-531.32094	-0.0190304	-0.0988999	-0.0252836	0.9811496	0.9058333	0.9750334
0.0005	-0.0021	22.3335	6.2705819	36.194715	-64.798764	6.2431863	-6.2705819	1.186536	-1.1591404	1854.4598	-1854.4598	-477.51641	-0.0208246	-0.1005621	-0.0282854	0.9793907	0.904329	0.9721109
0.0006	-0.0023	21.2758	6.2541813	36.199214	-63.729242	6.2515843	-6.2541813	1.2862253	-1.2836283	1754.0196	-1754.0196	-426.23623	-0.0228278	-0.1027744	-0.0307427	0.9774307	0.9023306	0.9697251
0.0005	-0.0026	20.4048	6.2191955	42.686978	-69.310931	6.2515312	-6.2191955	1.3556988	-1.3880345	1910.5615	-1910.5615	-378.6789	-0.0250449	-0.1054411	-0.0321903	0.9752661	0.8999275	0.9683223
0.0004	-0.0030	19.7361	6.1751471	55.061237	-80.972434	6.2559339	-6.1751471	1.407085	-1.4878718	2247.7086	-2247.7086	-335.06606	-0.0275115	-0.1084813	-0.0334403	0.9728635	0.8971957	0.9671127
0.0003	-0.0034	19.2786	6.1208466	86.918079	-112.31751	6.2700711	-6.1208466	1.429615	-1.5788395	3179.7114	-3179.7114	-294.667	-0.030303	-0.111991	-0.0343538	0.9701516	0.8940523	0.9662296
0.0001	-0.0039	19.0329	6.0338969	225.70901	-250.77586	6.2687748	-6.0338969	1.4159046	-1.6507825	7280.747	-7280.747	-257.15041	-0.0334369	-0.116302	-0.0351289	0.967116	0.8902063	0.965481
-0.0001	-0.0045	18.9949	5.9037373	-438.61962	413.72101	6.2333154	-5.9037373	1.3688423	-1.6984204	-12318.949	12318.949	-222.79988	-0.03691	-0.1216021	-0.0359621	0.9637629	0.8855006	0.9646768
-0.0003	-0.0052	19.1685	5.7299972	-124.85505	99.956571	6.1543823	-5.7299972	1.2978052	-1.7221904	-3025.4233	3025.4233	-191.80749	-0.0407331	-0.1279932	-0.0370968	0.9600853	0.8798594	0.9635829
-0.0006	-0.0061	19.5617	5.5157454	-79.454841	54.377422	6.0286956	-5.5157454	1.209353	-1.7223033	-1647.8397	1647.8397	-164.12494	-0.0449374	-0.1355869	-0.0386754	0.9560574	0.8732032	0.9620629
-0.0010	-0.0072	20.1848	5.2680291	-56.99679	31.543935	5.859825	-5.2680291	1.0997098	-1.6915057	-995.69513	995.69513	-139.6505	-0.0495636	-0.1444757	-0.0399548	0.9516447	0.8654759	0.9608329
-0.0016	-0.0085	21.0555	4.9941184	-42.973506	16.923908	5.6530662	-4.9941184	0.973184	-1.6321318	-620.44733	620.44733	-118.20171	-0.0546598	-0.1547776	-0.0405499	0.9468072	0.8566057	0.9602612
-0.0023	-0.0100	22.2091	4.7038988	-36.396964	9.4840094	5.4180014	-4.7038988	0.8479795	-1.5620822	-430.67176	430.67176	-99.582748	-0.0602834	-0.1665782	-0.041691	0.9414977	0.8465566	0.9591661
-0.0029	-0.0120	23.7228	4.409176	-35.789669	7.6577284	5.1671125	-4.409176	0.737468	-1.4954045	-347.57646	347.57646	-83.569729	-0.066511	-0.1799109	-0.04516	0.9356526	0.8353446	0.9558445
-0.0037	-0.0143	25.7456	4.1216983	-34.45609	4.5888197	4.9151671	-4.1216983	0.624747	-1.4182159	-267.48958	267.48958	-69.939349	-0.073424	-0.1947333	-0.0479541	0.9292067	0.8230542	0.9531776
-0.0045	-0.0171	28.5715	3.8507638	-36.295872	3.8736229	4.6760698	-3.8507638	0.522691	-1.3479969	-221.94192	221.94192	-58.442453	-0.0811112	-0.2109555	-0.0526493	0.9220912	0.8098101	0.9487126
-0.0048	-0.0205	32.7768	3.6000555	-43.645051	7.268233	4.4566462	-3.6000555	0.4304017	-1.2869925	-206.22563	206.22563	-48.780359	-0.0896869	-0.2285736	-0.0607868	0.9142174	0.7956677	0.9410239
-0.0055	-0.0246	39.5789	3.3671189	-52.663004	9.7170054	4.2553917	-3.3671189	0.3324208	-1.2206936	-180.23213	180.23213	-40.629693	-0.0993187	-0.2478137	-0.0683945	0.9054541	0.7805054	0.933892
-0.0053	-0.0297	52.0007	3.146634	-80.803869	25.656576	4.0657234	-3.146634	0.2382021	-1.1572915	-187.32465	187.32465	-33.698286	-0.1102535	-0.2691534	-0.0817654	0.8956071	0.764026	0.9214881