

February 24, 1992

EFFECT OF REDUCING CABLE INSULATION ON HARMONIC
COEFFICIENTS IN 50 mm SSC MAGNETS

Enclosed are analytical calculations on modeling the effect of insulation thickness on harmonics. On the inner coil, the cable size was reduced by 3 mils and the wedge sizes were increased to keep the poles fixed. The increase in wedge sizes were: 30 mils for wedge #1 (the largest wedge) and 15 mils each on the remaining two wedges. The total change for the outer coil was 10 mils (10/26 mils per cable) and again pole positions were kept fixed by increasing the wedge size by this amount. Tables 1 and 2 show the harmonics for the ideal and modified coil geometries. More detailed outputs and plots of coil geometry for each case are also included. Note that table 2 is only for the above effect on harmonics, and contributions from any other manufacturing errors should be added to this. I have also included the cable coordinates for both the original and modified cross-sections. Each line in this table gives the coordinates for the four corners of each cable in all four quadrants (SEG= cable #, KA= quadrant). It should also be noted that for this run the thickness of the midplane is unchanged (8 mils)

Akbar Mokhtarani

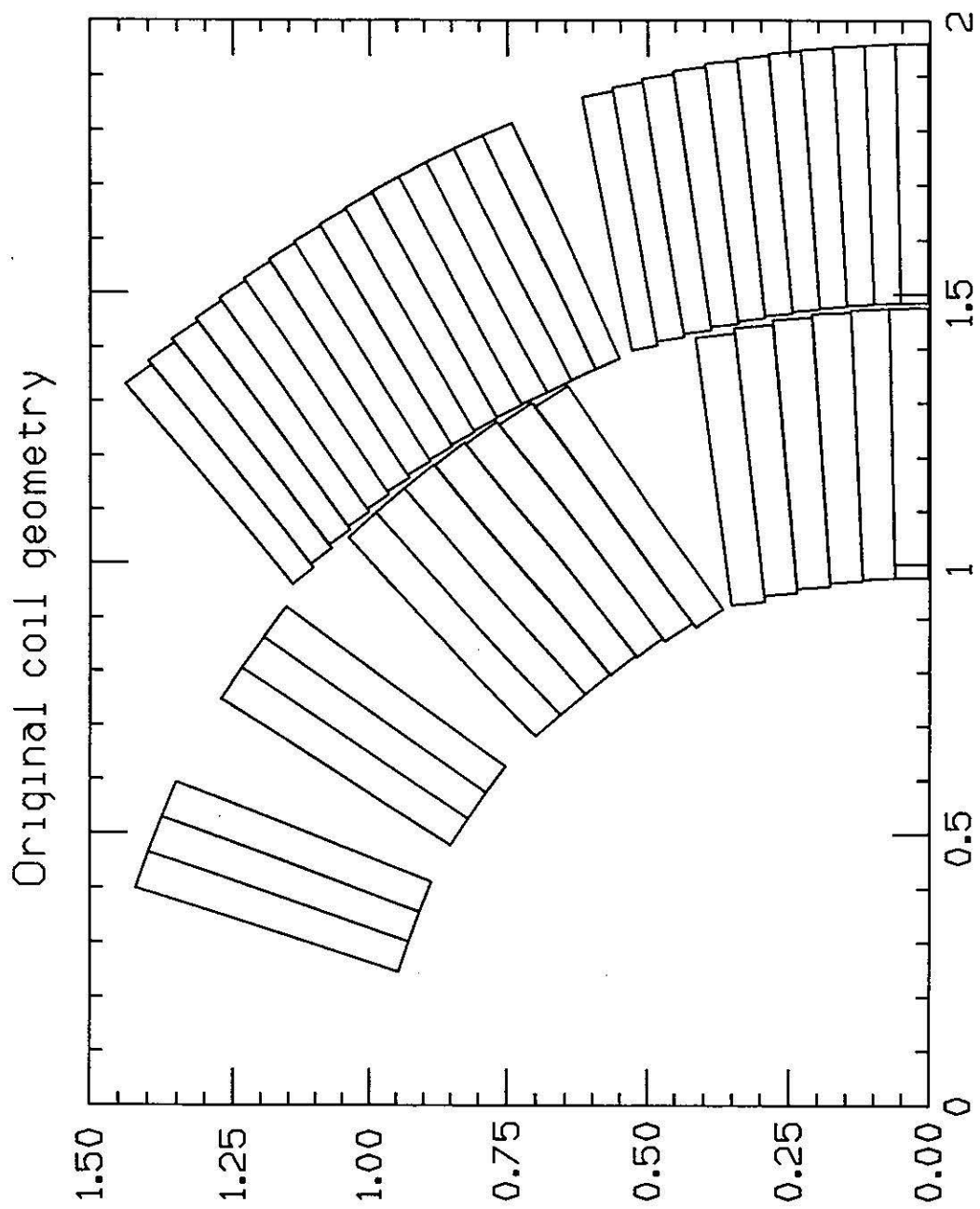
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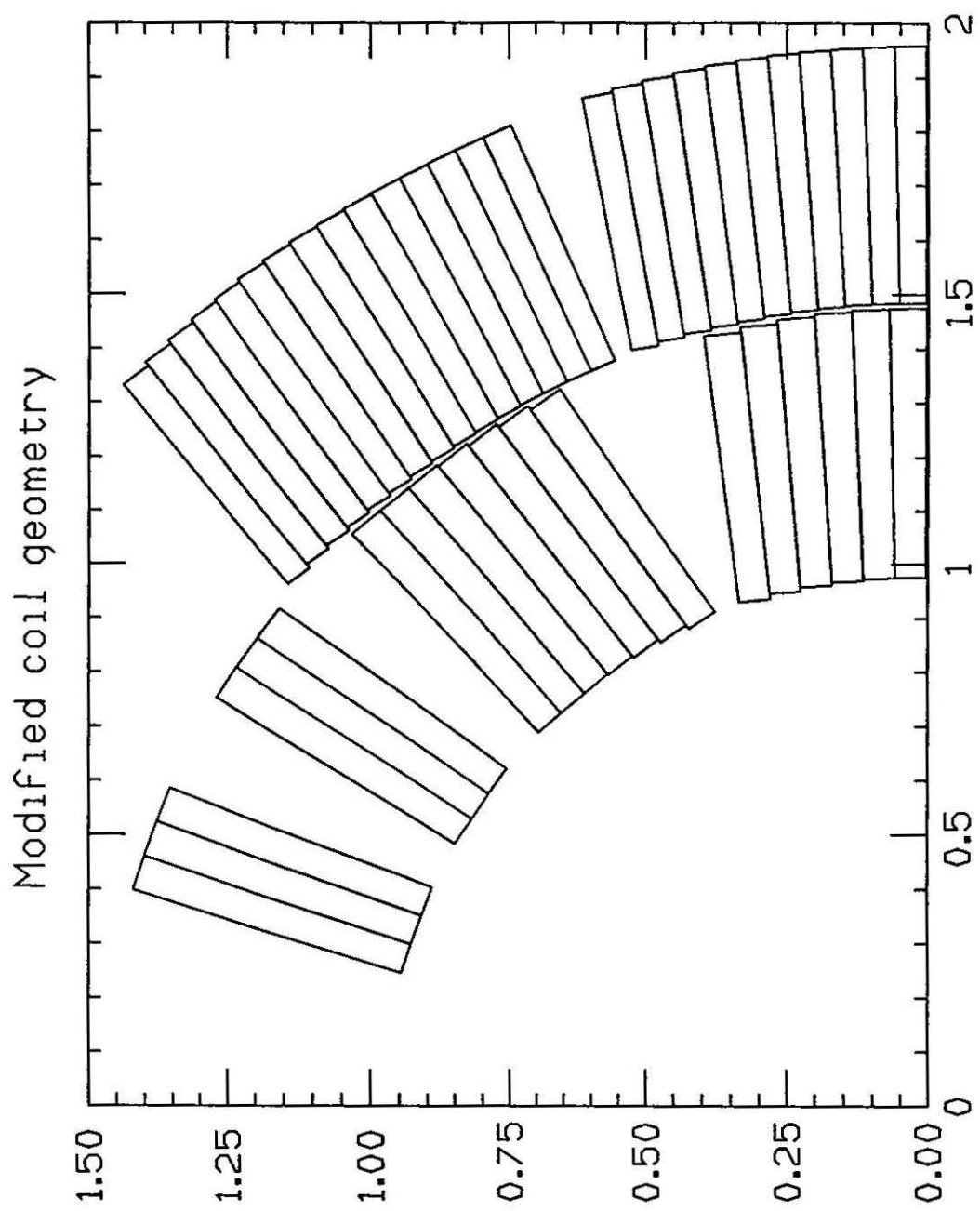
Table 1.
Multipole coefficients (total).
Original cross section

n	a_n	b_n	an/bl	bn/bl
1	0.000000000	52.227629081	0.000	10000.000
2	0.000000000	0.000000000	0.000	0.000
3	0.000000000	0.001207632	0.000	0.231
4	0.000000000	0.000000000	0.000	0.000
5	0.000000000	0.000295969	0.000	0.057
6	0.000000000	0.000000000	0.000	0.000
7	0.000000000	-0.000126138	0.000	-0.024
8	0.000000000	0.000000000	0.000	0.000
9	0.000000000	0.000211505	0.000	0.040

Table 2.
Multipole coefficients (total).
Reducing insulation by 60 and 10 mils on
inner and outer coils, respectively.
(Shimmed the wedges, poles fixed)

n	a_n	b_n	an/bl	bn/bl
1	0.000000000	52.214041186	0.000	10000.000
2	0.000000000	0.000000000	0.000	0.000
3	0.000000000	0.011196011	0.000	2.144
4	0.000000000	0.000000000	0.000	0.000
5	0.000000000	0.002210802	0.000	0.423
6	0.000000000	0.000000000	0.000	0.000
7	0.000000000	0.000206014	0.000	0.039
8	0.000000000	0.000000000	0.000	0.000
9	0.000000000	0.000356600	0.000	0.068





5 cm SSC magnet, new coil geometry, No

(-SNOW2E)

18-FEB-9 09:46:36

NSEGS = 45 SEGMENTS; DIPOLE SYMMETRY

RIRON = 6.7820 CM
 RIRON = 2.6701 INCHES
 RREF = 1.0000 CM
 RREF = 0.3937 INCHES
 ROFF = 0.0000 CM
 ROFF = 0.0000 INCHES
 CURRENT = 5.0000 KAMPS/TURN
 SEGMENT AREA = 0.0319 SQINS
 CDENSE = 156.7836 KAMPS/SQIN
 FACTOR = 2.4302 KGAUSS*INCH
 SEGMENT AREA = 0.0249 SQINS
 CDENSE = 200.5053 KAMPS/SQIN
 FACTOR = 3.1092 KGAUSS*RREF

 comments for this run:
 original geometry

Multipole coefficients for inner and outer coils
 higher coefficients (n>1) are in 10**-4

pole	a(in)	b(in)	a(out)	b(out)	a(in)/b1	b(in)/b1	a(out)/b1	b(out)/b1
1	0.00000000	22.4493844	0.00000000	29.7782447	0.00000000	4298.3732473	0.00000000	5701.6267527
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	0.00000000	-0.2820305	0.00000000	0.2832381	0.00000000	-54.0002515	0.00000000	54.2314762
4	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000000	0.0153110	0.00000000	-0.0150151	0.00000000	2.9315996	0.00000000	-2.8749305
6	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	0.00000000	-0.0000452	0.00000000	-0.0000810	0.00000000	-0.0008483	0.00000000	-0.0155033
8	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000000	0.0001722	0.00000000	0.0000393	0.00000000	0.0329717	0.00000000	0.0075249

Multipole coefficients (total). Skew, Normal, ratios

1	0.0000000000	52.227629081	0.000	10000.000
2	0.0000000000	0.0000000000	0.000	0.000
3	0.0000000000	0.001207632	0.000	0.231
4	0.0000000000	0.0000000000	0.000	0.000
5	0.0000000000	0.000295969	0.000	0.057
6	0.0000000000	0.0000000000	0.000	0.000
7	0.0000000000	-0.000126138	0.000	-0.024
8	0.0000000000	0.0000000000	0.000	0.000
9	0.0000000000	0.000211505	0.000	0.040

	RREF	units	cm	BOTH	AIR	IRON	RATIO	DIFF
X =	0.000	0.000		52.227629081	39.567295473	12.680333608	10000.000	0.000
X =	0.100	0.100		52.227641187	39.567137994	12.680503193	10000.002	0.002
X =	0.200	0.200		52.227677852	39.568666117	12.681011735	10000.009	0.009
X =	0.300	0.300		52.227740087	39.5685881485	12.681858602	10000.021	0.021
X =	0.400	0.400		52.227829501	39.564786763	12.683042738	10000.038	0.038
X =	0.500	0.500		52.227948342	39.563385677	12.684562665	10000.061	0.061
X =	0.600	0.600		52.228099853	39.561683373	12.686416481	10000.090	0.090
X =	0.700	0.700		52.228289236	39.559687375	12.688601861	10000.126	0.126
X =	0.800	0.800		52.228525613	39.557409556	12.671116057	10000.172	0.172
X =	0.900	0.900		52.228825459	39.554809604	12.673965895	10000.229	0.229
X =	1.000	1.000		52.229210049	39.552100271	12.677117778	10000.304	0.304
X =	1.100	1.100		52.229753562	39.549155880	12.680597682	10000.407	0.407
X =	1.200	1.200		52.230514577	39.546123419	12.684391158	10000.552	0.552
X =	1.300	1.300		52.231631760	39.543138425	12.688493334	10000.766	0.766
X =	1.400	1.400		52.233304635	39.540405723	12.692898911	10001.087	1.087
X =	1.500	1.500		52.235828436	39.538226269	12.697602167	10001.570	1.570
X =	1.600	1.600		52.239628088	39.537031132	12.702596956	10002.297	2.297
X =	1.700	1.700		52.245300479	39.537423768	12.707876712	10003.384	3.384
X =	1.800	1.800		52.253666256	39.540231806	12.713434450	10004.985	4.985

X =	1.900	1.900	52.265832463	39.546569693	12.719262769	10007.315	7.315
X =	2.000	2.000	52.283267441	39.557913581	12.725353860	10010.653	10.653
X =	2.100	2.100	52.307889466	39.576189964	12.731699503	10015.367	15.367
X =	2.200	2.200	52.342170714	39.603879633	12.738291081	10021.931	21.931
X =	2.300	2.300	52.389258207	39.644138623	12.745119584	10030.947	30.947
X =	2.478	2.478	52.517934827	39.760084960	12.757849867	10055.585	55.585

5 cm SSC magnet, new coil geometry, No

(-SNOW2E)

13-FEB-9 14:17:27

NSEGS = 45 SEGMENTS; DIPOLE SYMMETRY
 RIRON = 8.7820 CM
 RIRON = 2.8701 INCHES
 RREF = 1.0000 CM
 RREF = 0.3937 INCHES
 ROFF = 0.0000 CM
 ROFF = 0.0000 INCHES
 CURRENT = 5.0000 KAMPS/TURN
 SEGMENT AREA = 0.0319 SQINS
 CDENSE = 158.7836 KAMPS/SQIN
 FACTOR = 2.4302 KGAUSS*INCH
 SEGMENT AREA = 0.0249 SQINS
 CDENSE = 200.5953 KAMPS/SQIN
 FACTOR = 3.1092 KGAUSS*RREF

 comments for this run:
 run on case 9

 case: 9 Reduced insulation, shims on wedges, poles fixed
 error= 10.00 mils

Multipole coefficients for inner and outer coils
 higher coefficients (n>1) are in 10**-4

pole	a(in)	b(in)	a(out)	b(out)	a(in)/b1	b(in)/b1	a(out)/b1	b(out)/b1
1	0.00000000	22.4440517	0.00000000	29.7699895	0.00000000	4298.4705295	0.00000000	5701.5294705
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	0.00000000	-0.2704582	0.00000000	0.2816522	0.00000000	-51.7975987	0.00000000	53.9418496
4	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000000	0.0171947	0.00000000	-0.0149839	0.00000000	3.2931197	0.00000000	-2.8697083
6	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	0.00000000	0.0002669	0.00000000	-0.0000609	0.00000000	0.0511248	0.00000000	-0.0116689
8	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000000	0.0003155	0.00000000	0.0000411	0.00000000	0.0604237	0.00000000	0.0078720

Multipole coefficients (total). Skew, Normal, ratios

1	0.0000000000	52.214041186	0.000	10000.000
2	0.0000000000	0.0000000000	0.000	0.000
3	0.0000000000	0.011196011	0.000	2.144
4	0.0000000000	0.0000000000	0.000	0.000
5	0.0000000000	0.002210802	0.000	0.423
6	0.0000000000	0.0000000000	0.000	0.000
7	0.0000000000	0.000206014	0.000	0.039
8	0.0000000000	0.0000000000	0.000	0.000
9	0.0000000000	0.000356600	0.000	0.068

	RREF	units	cm	BOTH	AIR	IRON	RATIO	DIFF
X =	0.000	0.000		52.214041186	39.554871086	12.659170101	10000.000	0.000
X =	0.100	0.100		52.214153368	39.554813795	12.659339573	10000.021	0.021
X =	0.200	0.200		52.214492578	39.554644798	12.659847780	10000.086	0.086
X =	0.300	0.300		52.215066909	39.554372817	12.660694091	10000.196	0.196
X =	0.400	0.400		52.215890222	39.554012764	12.661877458	10000.354	0.354
X =	0.500	0.500		52.216982976	39.553586566	12.663396410	10000.563	0.563
X =	0.600	0.600		52.218373872	39.553124815	12.665249057	10000.830	0.830
X =	0.700	0.700		52.220102840	39.552669753	12.667433087	10001.161	1.161
X =	0.800	0.800		52.222226011	39.552280241	12.669945770	10001.568	1.568
X =	0.900	0.900		52.224823452	39.552039501	12.672783951	10002.065	2.065
X =	1.000	1.000		52.228010613	39.552068558	12.675944055	10002.675	2.675
X =	1.100	1.100		52.231954565	39.552532477	12.679422088	10003.431	3.431
X =	1.200	1.200		52.236899523	39.553682598	12.683213632	10004.377	4.377
X =	1.300	1.300		52.243180000	39.555866152	12.687313848	10005.581	5.581
X =	1.400	1.400		52.251292234	39.559574754	12.691717480	10007.134	7.134

X =	1.500	1.500	52.261910284	39.585491433	12.696418851	10009.168	9.168
X =	1.600	1.600	52.275963867	39.574551998	12.701411869	10011.859	11.859
X =	1.700	1.700	52.294710702	39.588020678	12.706690024	10015.450	15.450
X =	1.800	1.800	52.319828513	39.607582113	12.712246400	10020.260	20.260
X =	1.900	1.900	52.353525615	39.635451945	12.718073670	10026.714	26.714
X =	2.000	2.000	52.398872468	39.674508362	12.724164106	10035.360	35.360
X =	2.100	2.100	52.458956697	39.728447115	12.730509583	10046.906	46.906
X =	2.200	2.200	52.539064260	39.801982673	12.737101588	10062.248	62.248
X =	2.300	2.300	52.644889549	39.900958322	12.743931226	10082.516	82.516
X =	2.478	2.478	52.921328304	40.164662600	12.756665703	10135.459	135.459


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NSEGS =          45 SEGMENTS;  DIPOLE SYMMETRY
  RIRON =          6.7820          CM
  RIRON =          2.6701          INCHES
  RREF =           1.0000          CM
  RREF =           0.3937          INCHES
  ROFF =           0.0000          CM
  ROFF =           0.0000          INCHES
  CURRENT =         5.0000      KAMPS/TURN
SEGMENT AREA =       0.0319      SQINS
  CDENSE =        156.7836      KAMPS/SQIN
  FACTOR =         2.4302      KGAUSS*INCH
SEGMENT AREA =       0.0249      SQINS
  CDENSE =        200.5953      KAMPS/SQIN
  FACTOR =         3.1092      KGAUSS*RREF

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 comments for this run:
 Reduced insulation

Original (unperturbed) coil cross section

KA, SEG =	1	1	0.9757	0.0040	1.4747	0.0040	1.4740	0.0732	0.9751	0.0626
KA, SEG =	2	1	0.9757	-0.0040	1.4747	-0.0040	1.4740	-0.0732	0.9751	-0.0626
KA, SEG =	3	1	-0.9757	-0.0040	-1.4747	-0.0040	-1.4740	-0.0732	-0.9751	-0.0626
KA, SEG =	4	1	-0.9757	0.0040	-1.4747	0.0040	-1.4740	0.0732	-0.9751	0.0626
KA, SEG =	1	2	0.9737	0.0625	1.4726	0.0732	1.4704	0.1424	0.9718	0.1211
KA, SEG =	2	2	0.9737	-0.0625	1.4726	-0.0732	1.4704	-0.1424	0.9718	-0.1211
KA, SEG =	3	2	-0.9737	-0.0625	-1.4726	-0.0732	-1.4704	-0.1424	-0.9718	-0.1211
KA, SEG =	4	2	-0.9737	0.0625	-1.4726	0.0732	-1.4704	0.1424	-0.9718	0.1211
KA, SEG =	1	3	0.9682	0.1209	1.4667	0.1423	1.4631	0.2114	0.9650	0.1794
KA, SEG =	2	3	0.9682	-0.1209	1.4667	-0.1423	1.4631	-0.2114	0.9650	-0.1794
KA, SEG =	3	3	-0.9682	-0.1209	-1.4667	-0.1423	-1.4631	-0.2114	-0.9650	-0.1794
KA, SEG =	4	3	-0.9682	0.1209	-1.4667	0.1423	-1.4631	0.2114	-0.9650	0.1794
KA, SEG =	1	4	0.9591	0.1790	1.4571	0.2110	1.4520	0.2801	0.9548	0.2375
KA, SEG =	2	4	0.9591	-0.1790	1.4571	-0.2110	1.4520	-0.2801	0.9548	-0.2375
KA, SEG =	3	4	-0.9591	-0.1790	-1.4571	-0.2110	-1.4520	-0.2801	-0.9548	-0.2375
KA, SEG =	4	4	-0.9591	0.1790	-1.4571	0.2110	-1.4520	0.2801	-0.9548	0.2375
KA, SEG =	1	5	0.9465	0.2368	1.4437	0.2794	1.4371	0.3483	0.9409	0.2951
KA, SEG =	2	5	0.9465	-0.2368	1.4437	-0.2794	1.4371	-0.3483	0.9409	-0.2951
KA, SEG =	3	5	-0.9465	-0.2368	-1.4437	-0.2794	-1.4371	-0.3483	-0.9409	-0.2951
KA, SEG =	4	5	-0.9465	0.2368	-1.4437	0.2794	-1.4371	0.3483	-0.9409	0.2951
KA, SEG =	1	6	0.9304	0.2939	1.4266	0.3472	1.4184	0.4159	0.9235	0.3521
KA, SEG =	2	6	0.9304	-0.2939	1.4266	-0.3472	1.4184	-0.4159	0.9235	-0.3521
KA, SEG =	3	6	-0.9304	-0.2939	-1.4266	-0.3472	-1.4184	-0.4159	-0.9235	-0.3521
KA, SEG =	4	6	-0.9304	0.2939	-1.4266	0.3472	-1.4184	0.4159	-0.9235	0.3521
KA, SEG =	1	7	0.9160	0.3676	1.3296	0.6468	1.2902	0.7038	0.8827	0.4158
KA, SEG =	2	7	0.9160	-0.3676	1.3296	-0.6468	1.2902	-0.7038	0.8827	-0.4158
KA, SEG =	3	7	-0.9160	-0.3676	-1.3296	-0.6468	-1.2902	-0.7038	-0.8827	-0.4158
KA, SEG =	4	7	-0.9160	0.3676	-1.3296	0.6468	-1.2902	0.7038	-0.8827	0.4158
KA, SEG =	1	8	0.8901	0.4211	1.2977	0.7091	1.2571	0.7652	0.8558	0.4686
KA, SEG =	2	8	0.8901	-0.4211	1.2977	-0.7091	1.2571	-0.7652	0.8558	-0.4686
KA, SEG =	3	8	-0.8901	-0.4211	-1.2977	-0.7091	-1.2571	-0.7652	-0.8558	-0.4686
KA, SEG =	4	8	-0.8901	0.4211	-1.2977	0.7091	-1.2571	0.7652	-0.8558	0.4686
KA, SEG =	1	9	0.8613	0.4726	1.2626	0.7693	1.2209	0.8245	0.8260	0.5193
KA, SEG =	2	9	0.8613	-0.4726	1.2626	-0.7693	1.2209	-0.8245	0.8260	-0.5193
KA, SEG =	3	9	-0.8613	-0.4726	-1.2626	-0.7693	-1.2209	-0.8245	-0.8260	-0.5193
KA, SEG =	4	9	-0.8613	0.4726	-1.2626	0.7693	-1.2209	0.8245	-0.8260	0.5193
KA, SEG =	1	10	0.8296	0.5221	1.2244	0.8273	1.1815	0.8816	0.7933	0.5681
KA, SEG =	2	10	0.8296	-0.5221	1.2244	-0.8273	1.1815	-0.8816	0.7933	-0.5681
KA, SEG =	3	10	-0.8296	-0.5221	-1.2244	-0.8273	-1.1815	-0.8816	-0.7933	-0.5681
KA, SEG =	4	10	-0.8296	0.5221	-1.2244	0.8273	-1.1815	0.8816	-0.7933	0.5681
KA, SEG =	1	11	0.7950	0.5695	1.1833	0.8830	1.1392	0.9364	0.7577	0.6147
KA, SEG =	2	11	0.7950	-0.5695	1.1833	-0.8830	1.1392	-0.9364	0.7577	-0.6147
KA, SEG =	3	11	-0.7950	-0.5695	-1.1833	-0.8830	-1.1392	-0.9364	-0.7577	-0.6147

KA, SEG =	4	11	-0.7950	0.5695	-1.1833	0.8830	-1.1392	0.9364	-0.7577	0.6147
KA, SEG =	1	12	0.7577	0.6147	1.1392	0.9364	1.0940	0.9889	0.7195	0.6590
KA, SEG =	2	12	0.7577	-0.6147	1.1392	-0.9364	1.0940	-0.9889	0.7195	-0.6590
KA, SEG =	3	12	-0.7577	-0.6147	-1.1392	-0.9364	-1.0940	-0.9889	-0.7195	-0.6590
KA, SEG =	4	12	-0.7577	0.6147	-1.1392	0.9364	-1.0940	0.9889	-0.7195	0.6590
KA, SEG =	1	13	0.7195	0.6590	1.0940	0.9889	1.0477	1.0403	0.6803	0.7026
KA, SEG =	2	13	0.7195	-0.6590	1.0940	-0.9889	1.0477	-1.0403	0.6803	-0.7026
KA, SEG =	3	13	-0.7195	-0.6590	-1.0940	-0.9889	-1.0477	-1.0403	-0.6803	-0.7026
KA, SEG =	4	13	-0.7195	0.6590	-1.0940	0.9889	-1.0477	1.0403	-0.6803	0.7026
KA, SEG =	1	14	0.6238	0.7532	0.9193	1.1553	0.8631	1.1957	0.5762	0.7874
KA, SEG =	2	14	0.6238	-0.7532	0.9193	-1.1553	0.8631	-1.1957	0.5762	-0.7874
KA, SEG =	3	14	-0.6238	-0.7532	-0.9193	-1.1553	-0.8631	-1.1957	-0.5762	-0.7874
KA, SEG =	4	14	-0.6238	0.7532	-0.9193	1.1553	-0.8631	1.1957	-0.5762	0.7874
KA, SEG =	1	15	0.5762	0.7874	0.8631	1.1957	0.8060	1.2349	0.5279	0.8206
KA, SEG =	2	15	0.5762	-0.7874	0.8631	-1.1957	0.8060	-1.2349	0.5279	-0.8206
KA, SEG =	3	15	-0.5762	-0.7874	-0.8631	-1.1957	-0.8060	-1.2349	-0.5279	-0.8206
KA, SEG =	4	15	-0.5762	0.7874	-0.8631	1.1957	-0.8060	1.2349	-0.5279	0.8206
KA, SEG =	1	16	0.5279	0.8206	0.8060	1.2349	0.7481	1.2729	0.4789	0.8527
KA, SEG =	2	16	0.5279	-0.8206	0.8060	-1.2349	0.7481	-1.2729	0.4789	-0.8527
KA, SEG =	3	16	-0.5279	-0.8206	-0.8060	-1.2349	-0.7481	-1.2729	-0.4789	-0.8527
KA, SEG =	4	16	-0.5279	0.8206	-0.8060	1.2349	-0.7481	1.2729	-0.4789	0.8527
KA, SEG =	1	17	0.4114	0.8872	0.5949	1.3513	0.5302	1.3761	0.3567	0.9082
KA, SEG =	2	17	0.4114	-0.8872	0.5949	-1.3513	0.5302	-1.3761	0.3567	-0.9082
KA, SEG =	3	17	-0.4114	-0.8872	-0.5949	-1.3513	-0.5302	-1.3761	-0.3567	-0.9082
KA, SEG =	4	17	-0.4114	0.8872	-0.5949	1.3513	-0.5302	1.3761	-0.3567	0.9082
KA, SEG =	1	18	0.3567	0.9082	0.5302	1.3761	0.4650	1.3994	0.3016	0.9279
KA, SEG =	2	18	0.3567	-0.9082	0.5302	-1.3761	0.4650	-1.3994	0.3016	-0.9279
KA, SEG =	3	18	-0.3567	-0.9082	-0.5302	-1.3761	-0.4650	-1.3994	-0.3016	-0.9279
KA, SEG =	4	18	-0.3567	0.9082	-0.5302	1.3761	-0.4650	1.3994	-0.3016	0.9279
KA, SEG =	1	19	0.3016	0.9279	0.4650	1.3994	0.3994	1.4214	0.2460	0.9465
KA, SEG =	2	19	0.3016	-0.9279	0.4650	-1.3994	0.3994	-1.4214	0.2460	-0.9465
KA, SEG =	3	19	-0.3016	-0.9279	-0.4650	-1.3994	-0.3994	-1.4214	-0.2460	-0.9465
KA, SEG =	4	19	-0.3016	0.9279	-0.4650	1.3994	-0.3994	1.4214	-0.2460	0.9465
KA, SEG =	1	20	1.4847	0.0040	1.9583	0.0040	1.9578	0.0607	1.4843	0.0525
KA, SEG =	2	20	1.4847	-0.0040	1.9583	-0.0040	1.9578	-0.0607	1.4843	-0.0525
KA, SEG =	3	20	-1.4847	-0.0040	-1.9583	-0.0040	-1.9578	-0.0607	-1.4843	-0.0525
KA, SEG =	4	20	-1.4847	0.0040	-1.9583	0.0040	-1.9578	0.0607	-1.4843	0.0525
KA, SEG =	1	21	1.4838	0.0525	1.9573	0.0607	1.9558	0.1175	1.4825	0.1010
KA, SEG =	2	21	1.4838	-0.0525	1.9573	-0.0607	1.9558	-0.1175	1.4825	-0.1010
KA, SEG =	3	21	-1.4838	-0.0525	-1.9573	-0.0607	-1.9558	-0.1175	-1.4825	-0.1010
KA, SEG =	4	21	-1.4838	0.0525	-1.9573	0.0607	-1.9558	0.1175	-1.4825	0.1010
KA, SEG =	1	22	1.4813	0.1010	1.9546	0.1174	1.9521	0.1741	1.4792	0.1494
KA, SEG =	2	22	1.4813	-0.1010	1.9546	-0.1174	1.9521	-0.1741	1.4792	-0.1494
KA, SEG =	3	22	-1.4813	-0.1010	-1.9546	-0.1174	-1.9521	-0.1741	-1.4792	-0.1494
KA, SEG =	4	22	-1.4813	0.1010	-1.9546	0.1174	-1.9521	0.1741	-1.4792	0.1494
KA, SEG =	1	23	1.4772	0.1493	1.9501	0.1740	1.9467	0.2306	1.4742	0.1978
KA, SEG =	2	23	1.4772	-0.1493	1.9501	-0.1740	1.9467	-0.2306	1.4742	-0.1978
KA, SEG =	3	23	-1.4772	-0.1493	-1.9501	-0.1740	-1.9467	-0.2306	-1.4742	-0.1978
KA, SEG =	4	23	-1.4772	0.1493	-1.9501	0.1740	-1.9467	0.2306	-1.4742	0.1978
KA, SEG =	1	24	1.4715	0.1976	1.9440	0.2305	1.9395	0.2870	1.4677	0.2459
KA, SEG =	2	24	1.4715	-0.1976	1.9440	-0.2305	1.9395	-0.2870	1.4677	-0.2459
KA, SEG =	3	24	-1.4715	-0.1976	-1.9440	-0.2305	-1.9395	-0.2870	-1.4677	-0.2459
KA, SEG =	4	24	-1.4715	0.1976	-1.9440	0.2305	-1.9395	0.2870	-1.4677	0.2459
KA, SEG =	1	25	1.4642	0.2456	1.9361	0.2867	1.9307	0.3432	1.4596	0.2939
KA, SEG =	2	25	1.4642	-0.2456	1.9361	-0.2867	1.9307	-0.3432	1.4596	-0.2939
KA, SEG =	3	25	-1.4642	-0.2456	-1.9361	-0.2867	-1.9307	-0.3432	-1.4596	-0.2939
KA, SEG =	4	25	-1.4642	0.2456	-1.9361	0.2867	-1.9307	0.3432	-1.4596	0.2939
KA, SEG =	1	26	1.4554	0.2935	1.9265	0.3428	1.9201	0.3992	1.4499	0.3417
KA, SEG =	2	26	1.4554	-0.2935	1.9265	-0.3428	1.9201	-0.3992	1.4499	-0.3417
KA, SEG =	3	26	-1.4554	-0.2935	-1.9265	-0.3428	-1.9201	-0.3992	-1.4499	-0.3417
KA, SEG =	4	26	-1.4554	0.2935	-1.9265	0.3428	-1.9201	0.3992	-1.4499	0.3417
KA, SEG =	1	27	1.4450	0.3411	1.9151	0.3985	1.9077	0.4548	1.4387	0.3892
KA, SEG =	2	27	1.4450	-0.3411	1.9151	-0.3985	1.9077	-0.4548	1.4387	-0.3892
KA, SEG =	3	27	-1.4450	-0.3411	-1.9151	-0.3985	-1.9077	-0.4548	-1.4387	-0.3892
KA, SEG =	4	27	-1.4450	0.3411	-1.9151	0.3985	-1.9077	0.4548	-1.4387	0.3892
KA, SEG =	1	28	1.4330	0.3884	1.9020	0.4540	1.8937	0.5101	1.4259	0.4364

KA, SEG =	2	28	1.4330	-0.3884	1.9020	-0.4540	1.8937	-0.5101	1.4259	-0.4364
KA, SEG =	3	28	-1.4330	-0.3884	-1.9020	-0.4540	-1.8937	-0.5101	-1.4259	-0.4364
KA, SEG =	4	28	-1.4330	0.3884	-1.9020	0.4540	-1.8937	0.5101	-1.4259	0.4364
KA, SEG =	1	29	1.4194	0.4354	1.8873	0.5091	1.8779	0.5651	1.4115	0.4832
KA, SEG =	2	29	1.4194	-0.4354	1.8873	-0.5091	1.8779	-0.5651	1.4115	-0.4832
KA, SEG =	3	29	-1.4194	-0.4354	-1.8873	-0.5091	-1.8779	-0.5651	-1.4115	-0.4832
KA, SEG =	4	29	-1.4194	0.4354	-1.8873	0.5091	-1.8779	0.5651	-1.4115	0.4832
KA, SEG =	1	30	1.4043	0.4820	1.8708	0.5638	1.8605	0.6196	1.3955	0.5297
KA, SEG =	2	30	1.4043	-0.4820	1.8708	-0.5638	1.8605	-0.6196	1.3955	-0.5297
KA, SEG =	3	30	-1.4043	-0.4820	-1.8708	-0.5638	-1.8605	-0.6196	-1.3955	-0.5297
KA, SEG =	4	30	-1.4043	0.4820	-1.8708	0.5638	-1.8605	0.6196	-1.3955	0.5297
KA, SEG =	1	31	1.3798	0.5516	1.8133	0.7424	1.7900	0.7941	1.3599	0.5959
KA, SEG =	2	31	1.3798	-0.5516	1.8133	-0.7424	1.7900	-0.7941	1.3599	-0.5959
KA, SEG =	3	31	-1.3798	-0.5516	-1.8133	-0.7424	-1.7900	-0.7941	-1.3599	-0.5959
KA, SEG =	4	31	-1.3798	0.5516	-1.8133	0.7424	-1.7900	0.7941	-1.3599	0.5959
KA, SEG =	1	32	1.3604	0.5961	1.7905	0.7944	1.7663	0.8457	1.3397	0.6400
KA, SEG =	2	32	1.3604	-0.5961	1.7905	-0.7944	1.7663	-0.8457	1.3397	-0.6400
KA, SEG =	3	32	-1.3604	-0.5961	-1.7905	-0.7944	-1.7663	-0.8457	-1.3397	-0.6400
KA, SEG =	4	32	-1.3604	0.5961	-1.7905	0.7944	-1.7663	0.8457	-1.3397	0.6400
KA, SEG =	1	33	1.3397	0.6400	1.7663	0.8457	1.7412	0.8966	1.3182	0.6835
KA, SEG =	2	33	1.3397	-0.6400	1.7663	-0.8457	1.7412	-0.8966	1.3182	-0.6835
KA, SEG =	3	33	-1.3397	-0.6400	-1.7663	-0.8457	-1.7412	-0.8966	-1.3182	-0.6835
KA, SEG =	4	33	-1.3397	0.6400	-1.7663	0.8457	-1.7412	0.8966	-1.3182	0.6835
KA, SEG =	1	34	1.3181	0.6834	1.7410	0.8965	1.7151	0.9469	1.2959	0.7266
KA, SEG =	2	34	1.3181	-0.6834	1.7410	-0.8965	1.7151	-0.9469	1.2959	-0.7266
KA, SEG =	3	34	-1.3181	-0.6834	-1.7410	-0.8965	-1.7151	-0.9469	-1.2959	-0.7266
KA, SEG =	4	34	-1.3181	0.6834	-1.7410	0.8965	-1.7151	0.9469	-1.2959	0.7266
KA, SEG =	1	35	1.2950	0.7261	1.7142	0.9465	1.6874	0.9965	1.2721	0.7689
KA, SEG =	2	35	1.2950	-0.7261	1.7142	-0.9465	1.6874	-0.9965	1.2721	-0.7689
KA, SEG =	3	35	-1.2950	-0.7261	-1.7142	-0.9465	-1.6874	-0.9965	-1.2721	-0.7689
KA, SEG =	4	35	-1.2950	0.7261	-1.7142	0.9465	-1.6874	0.9965	-1.2721	0.7689
KA, SEG =	1	36	1.2706	0.7681	1.6859	0.9957	1.6582	1.0452	1.2469	0.8104
KA, SEG =	2	36	1.2706	-0.7681	1.6859	-0.9957	1.6582	-1.0452	1.2469	-0.8104
KA, SEG =	3	36	-1.2706	-0.7681	-1.6859	-0.9957	-1.6582	-1.0452	-1.2469	-0.8104
KA, SEG =	4	36	-1.2706	0.7681	-1.6859	0.9957	-1.6582	1.0452	-1.2469	0.8104
KA, SEG =	1	37	1.2448	0.8092	1.6561	1.0440	1.6275	1.0931	1.2204	0.8511
KA, SEG =	2	37	1.2448	-0.8092	1.6561	-1.0440	1.6275	-1.0931	1.2204	-0.8511
KA, SEG =	3	37	-1.2448	-0.8092	-1.6561	-1.0440	-1.6275	-1.0931	-1.2204	-0.8511
KA, SEG =	4	37	-1.2448	0.8092	-1.6561	1.0440	-1.6275	1.0931	-1.2204	0.8511
KA, SEG =	1	38	1.2177	0.8495	1.6248	1.0914	1.5954	1.1400	1.1925	0.8910
KA, SEG =	2	38	1.2177	-0.8495	1.6248	-1.0914	1.5954	-1.1400	1.1925	-0.8910
KA, SEG =	3	38	-1.2177	-0.8495	-1.6248	-1.0914	-1.5954	-1.1400	-1.1925	-0.8910
KA, SEG =	4	38	-1.2177	0.8495	-1.6248	1.0914	-1.5954	1.1400	-1.1925	0.8910
KA, SEG =	1	39	1.1892	0.8889	1.5921	1.1379	1.5618	1.1859	1.1633	0.9300
KA, SEG =	2	39	1.1892	-0.8889	1.5921	-1.1379	1.5618	-1.1859	1.1633	-0.9300
KA, SEG =	3	39	-1.1892	-0.8889	-1.5921	-1.1379	-1.5618	-1.1859	-1.1633	-0.9300
KA, SEG =	4	39	-1.1892	0.8889	-1.5921	1.1379	-1.5618	1.1859	-1.1633	0.9300
KA, SEG =	1	40	1.1594	0.9274	1.5579	1.1834	1.5268	1.2309	1.1328	0.9680
KA, SEG =	2	40	1.1594	-0.9274	1.5579	-1.1834	1.5268	-1.2309	1.1328	-0.9680
KA, SEG =	3	40	-1.1594	-0.9274	-1.5579	-1.1834	-1.5268	-1.2309	-1.1328	-0.9680
KA, SEG =	4	40	-1.1594	0.9274	-1.5579	1.1834	-1.5268	1.2309	-1.1328	0.9680
KA, SEG =	1	41	1.1283	0.9650	1.5223	1.2278	1.4904	1.2748	1.1010	1.0052
KA, SEG =	2	41	1.1283	-0.9650	1.5223	-1.2278	1.4904	-1.2748	1.1010	-1.0052
KA, SEG =	3	41	-1.1283	-0.9650	-1.5223	-1.2278	-1.4904	-1.2748	-1.1010	-1.0052
KA, SEG =	4	41	-1.1283	0.9650	-1.5223	1.2278	-1.4904	1.2748	-1.1010	1.0052
KA, SEG =	1	42	1.0959	1.0016	1.4853	1.2713	1.4526	1.3176	1.0680	1.0413
KA, SEG =	2	42	1.0959	-1.0016	1.4853	-1.2713	1.4526	-1.3176	1.0680	-1.0413
KA, SEG =	3	42	-1.0959	-1.0016	-1.4853	-1.2713	-1.4526	-1.3176	-1.0680	-1.0413
KA, SEG =	4	42	-1.0959	1.0016	-1.4853	1.2713	-1.4526	1.3176	-1.0680	1.0413
KA, SEG =	1	43	1.0623	1.0372	1.4470	1.3136	1.4134	1.3594	1.0337	1.0764
KA, SEG =	2	43	1.0623	-1.0372	1.4470	-1.3136	1.4134	-1.3594	1.0337	-1.0764
KA, SEG =	3	43	-1.0623	-1.0372	-1.4470	-1.3136	-1.4134	-1.3594	-1.0337	-1.0764
KA, SEG =	4	43	-1.0623	1.0372	-1.4470	1.3136	-1.4134	1.3594	-1.0337	1.0764
KA, SEG =	1	44	1.0275	1.0717	1.4072	1.3547	1.3729	1.3999	0.9981	1.1104
KA, SEG =	2	44	1.0275	-1.0717	1.4072	-1.3547	1.3729	-1.3999	0.9981	-1.1104
KA, SEG =	3	44	-1.0275	-1.0717	-1.4072	-1.3547	-1.3729	-1.3999	-0.9981	-1.1104

KA, SEG =	4	44	-1.0275	1.0717	-1.4072	1.3547	-1.3729	1.3999	-0.9981	1.1104
KA, SEG =	1	45	0.9914	1.1052	1.3662	1.3947	1.3311	1.4393	0.9614	1.1433
KA, SEG =	2	45	0.9914	-1.1052	1.3662	-1.3947	1.3311	-1.4393	0.9614	-1.1433
KA, SEG =	3	45	-0.9914	-1.1052	-1.3662	-1.3947	-1.3311	-1.4393	-0.9614	-1.1433
KA, SEG =	4	45	-0.9914	1.1052	-1.3662	1.3947	-1.3311	1.4393	-0.9614	1.1433

Modified coil cross section

KA, SEG =	1	1	0.9757	0.0040	1.4747	0.0040	1.4741	0.0703	0.9753	0.0596
KA, SEG =	2	1	0.9757	-0.0040	1.4747	-0.0040	1.4741	-0.0703	0.9753	-0.0596
KA, SEG =	3	1	-0.9757	-0.0040	-1.4747	-0.0040	-1.4741	-0.0703	-0.9753	-0.0596
KA, SEG =	4	1	-0.9757	0.0040	-1.4747	0.0040	-1.4741	0.0703	-0.9753	0.0596
KA, SEG =	1	2	0.9739	0.0596	1.4728	0.0702	1.4710	0.1365	0.9725	0.1152
KA, SEG =	2	2	0.9739	-0.0596	1.4728	-0.0702	1.4710	-0.1365	0.9725	-0.1152
KA, SEG =	3	2	-0.9739	-0.0596	-1.4728	-0.0702	-1.4710	-0.1365	-0.9725	-0.1152
KA, SEG =	4	2	-0.9739	0.0596	-1.4728	0.0702	-1.4710	0.1365	-0.9725	0.1152
KA, SEG =	1	3	0.9689	0.1150	1.4673	0.1363	1.4643	0.2025	0.9666	0.1706
KA, SEG =	2	3	0.9689	-0.1150	1.4673	-0.1363	1.4643	-0.2025	0.9666	-0.1706
KA, SEG =	3	3	-0.9689	-0.1150	-1.4673	-0.1363	-1.4643	-0.2025	-0.9666	-0.1706
KA, SEG =	4	3	-0.9689	0.1150	-1.4673	0.1363	-1.4643	0.2025	-0.9666	0.1706
KA, SEG =	1	4	0.9607	0.1702	1.4584	0.2021	1.4542	0.2683	0.9576	0.2258
KA, SEG =	2	4	0.9607	-0.1702	1.4584	-0.2021	1.4542	-0.2683	0.9576	-0.2258
KA, SEG =	3	4	-0.9607	-0.1702	-1.4584	-0.2021	-1.4542	-0.2683	-0.9576	-0.2258
KA, SEG =	4	4	-0.9607	0.1702	-1.4584	0.2021	-1.4542	0.2683	-0.9576	0.2258
KA, SEG =	1	5	0.9494	0.2251	1.4460	0.2676	1.4405	0.3337	0.9453	0.2808
KA, SEG =	2	5	0.9494	-0.2251	1.4460	-0.2676	1.4405	-0.3337	0.9453	-0.2808
KA, SEG =	3	5	-0.9494	-0.2251	-1.4460	-0.2676	-1.4405	-0.3337	-0.9453	-0.2808
KA, SEG =	4	5	-0.9494	0.2251	-1.4460	0.2676	-1.4405	0.3337	-0.9453	0.2808
KA, SEG =	1	6	0.9348	0.2796	1.4300	0.3326	1.4234	0.3987	0.9297	0.3353
KA, SEG =	2	6	0.9348	-0.2796	1.4300	-0.3326	1.4234	-0.3987	0.9297	-0.3353
KA, SEG =	3	6	-0.9348	-0.2796	-1.4300	-0.3326	-1.4234	-0.3987	-0.9297	-0.3353
KA, SEG =	4	6	-0.9348	0.2796	-1.4300	0.3326	-1.4234	0.3987	-0.9297	0.3353
KA, SEG =	1	7	0.9118	0.3778	1.3247	0.6567	1.2863	0.7108	0.8792	0.4231
KA, SEG =	2	7	0.9118	-0.3778	1.3247	-0.6567	1.2863	-0.7108	0.8792	-0.4231
KA, SEG =	3	7	-0.9118	-0.3778	-1.3247	-0.6567	-1.2863	-0.7108	-0.8792	-0.4231
KA, SEG =	4	7	-0.9118	0.3778	-1.3247	0.6567	-1.2863	0.7108	-0.8792	0.4231
KA, SEG =	1	8	0.8867	0.4283	1.2938	0.7161	1.2545	0.7695	0.8534	0.4730
KA, SEG =	2	8	0.8867	-0.4283	1.2938	-0.7161	1.2545	-0.7695	0.8534	-0.4730
KA, SEG =	3	8	-0.8867	-0.4283	-1.2938	-0.7161	-1.2545	-0.7695	-0.8534	-0.4730
KA, SEG =	4	8	-0.8867	0.4283	-1.2938	0.7161	-1.2545	0.7695	-0.8534	0.4730
KA, SEG =	1	9	0.8589	0.4770	1.2600	0.7736	1.2197	0.8262	0.8249	0.5211
KA, SEG =	2	9	0.8589	-0.4770	1.2600	-0.7736	1.2197	-0.8262	0.8249	-0.5211
KA, SEG =	3	9	-0.8589	-0.4770	-1.2600	-0.7736	-1.2197	-0.8262	-0.8249	-0.5211
KA, SEG =	4	9	-0.8589	0.4770	-1.2600	0.7736	-1.2197	0.8262	-0.8249	0.5211
KA, SEG =	1	10	0.8285	0.5239	1.2233	0.8290	1.1821	0.8808	0.7938	0.5673
KA, SEG =	2	10	0.8285	-0.5239	1.2233	-0.8290	1.1821	-0.8808	0.7938	-0.5673
KA, SEG =	3	10	-0.8285	-0.5239	-1.2233	-0.8290	-1.1821	-0.8808	-0.7938	-0.5673
KA, SEG =	4	10	-0.8285	0.5239	-1.2233	0.8290	-1.1821	0.8808	-0.7938	0.5673
KA, SEG =	1	11	0.7956	0.5687	1.1838	0.8823	1.1417	0.9334	0.7602	0.6116
KA, SEG =	2	11	0.7956	-0.5687	1.1838	-0.8823	1.1417	-0.9334	0.7602	-0.6116
KA, SEG =	3	11	-0.7956	-0.5687	-1.1838	-0.8823	-1.1417	-0.9334	-0.7602	-0.6116
KA, SEG =	4	11	-0.7956	0.5687	-1.1838	0.8823	-1.1417	0.9334	-0.7602	0.6116
KA, SEG =	1	12	0.7602	0.6116	1.1417	0.9334	1.0986	0.9837	0.7242	0.6539
KA, SEG =	2	12	0.7602	-0.6116	1.1417	-0.9334	1.0986	-0.9837	0.7242	-0.6539
KA, SEG =	3	12	-0.7602	-0.6116	-1.1417	-0.9334	-1.0986	-0.9837	-0.7242	-0.6539
KA, SEG =	4	12	-0.7602	0.6116	-1.1417	0.9334	-1.0986	0.9837	-0.7242	0.6539
KA, SEG =	1	13	0.7241	0.6539	1.0986	0.9837	1.0546	1.0333	0.6874	0.6956
KA, SEG =	2	13	0.7241	-0.6539	1.0986	-0.9837	1.0546	-1.0333	0.6874	-0.6956
KA, SEG =	3	13	-0.7241	-0.6539	-1.0986	-0.9837	-1.0546	-1.0333	-0.6874	-0.6956
KA, SEG =	4	13	-0.7241	0.6539	-1.0986	0.9837	-1.0546	1.0333	-0.6874	0.6956
KA, SEG =	1	14	0.6204	0.7560	0.9160	1.1580	0.8620	1.1965	0.5751	0.7882
KA, SEG =	2	14	0.6204	-0.7560	0.9160	-1.1580	0.8620	-1.1965	0.5751	-0.7882
KA, SEG =	3	14	-0.6204	-0.7560	-0.9160	-1.1580	-0.8620	-1.1965	-0.5751	-0.7882
KA, SEG =	4	14	-0.6204	0.7560	-0.9160	1.1580	-0.8620	1.1965	-0.5751	0.7882
KA, SEG =	1	15	0.5751	0.7882	0.8620	1.1965	0.8074	1.2340	0.5293	0.8197
KA, SEG =	2	15	0.5751	-0.7882	0.8620	-1.1965	0.8074	-1.2340	0.5293	-0.8197

KA, SEG =	3 15	-0.5751	-0.7882	-0.8620	-1.1965	-0.8074	-1.2340	-0.5293	-0.8197
KA, SEG =	4 15	-0.5751	0.7882	-0.8620	1.1965	-0.8074	1.2340	-0.5293	0.8197
KA, SEG =	1 16	0.5293	0.8197	0.8074	1.2340	0.7521	1.2705	0.4830	0.8504
KA, SEG =	2 16	0.5293	-0.8197	0.8074	-1.2340	0.7521	-1.2705	0.4830	-0.8504
KA, SEG =	3 16	-0.5293	-0.8197	-0.8074	-1.2340	-0.7521	-1.2705	-0.4830	-0.8504
KA, SEG =	4 16	-0.5293	0.8197	-0.8074	1.2340	-0.7521	1.2705	-0.4830	0.8504
KA, SEG =	1 17	0.4028	0.8912	0.5862	1.3551	0.5241	1.3784	0.3506	0.9105
KA, SEG =	2 17	0.4028	-0.8912	0.5862	-1.3551	0.5241	-1.3784	0.3506	-0.9105
KA, SEG =	3 17	-0.4028	-0.8912	-0.5862	-1.3551	-0.5241	-1.3784	-0.3506	-0.9105
KA, SEG =	4 17	-0.4028	0.8912	-0.5862	1.3551	-0.5241	1.3784	-0.3506	0.9105
KA, SEG =	1 18	0.3506	0.9105	0.5241	1.3784	0.4617	1.4005	0.2982	0.9290
KA, SEG =	2 18	0.3506	-0.9105	0.5241	-1.3784	0.4617	-1.4005	0.2982	-0.9290
KA, SEG =	3 18	-0.3506	-0.9105	-0.5241	-1.3784	-0.4617	-1.4005	-0.2982	-0.9290
KA, SEG =	4 18	-0.3506	0.9105	-0.5241	1.3784	-0.4617	1.4005	-0.2982	0.9290
KA, SEG =	1 19	0.2982	0.9290	0.4617	1.4005	0.3989	1.4215	0.2455	0.9467
KA, SEG =	2 19	0.2982	-0.9290	0.4617	-1.4005	0.3989	-1.4215	0.2455	-0.9467
KA, SEG =	3 19	-0.2982	-0.9290	-0.4617	-1.4005	-0.3989	-1.4215	-0.2455	-0.9467
KA, SEG =	4 19	-0.2982	0.9290	-0.4617	1.4005	-0.3989	1.4215	-0.2455	0.9467
KA, SEG =	1 20	1.4847	0.0040	1.9583	0.0040	1.9578	0.0604	1.4843	0.0521
KA, SEG =	2 20	1.4847	-0.0040	1.9583	-0.0040	1.9578	-0.0604	1.4843	-0.0521
KA, SEG =	3 20	-1.4847	-0.0040	-1.9583	-0.0040	-1.9578	-0.0604	-1.4843	-0.0521
KA, SEG =	4 20	-1.4847	0.0040	-1.9583	0.0040	-1.9578	0.0604	-1.4843	0.0521
KA, SEG =	1 21	1.4838	0.0521	1.9573	0.0604	1.9559	0.1167	1.4826	0.1002
KA, SEG =	2 21	1.4838	-0.0521	1.9573	-0.0604	1.9559	-0.1167	1.4826	-0.1002
KA, SEG =	3 21	-1.4838	-0.0521	-1.9573	-0.0604	-1.9559	-0.1167	-1.4826	-0.1002
KA, SEG =	4 21	-1.4838	0.0521	-1.9573	0.0604	-1.9559	0.1167	-1.4826	0.1002
KA, SEG =	1 22	1.4813	0.1002	1.9546	0.1167	1.9522	0.1730	1.4793	0.1483
KA, SEG =	2 22	1.4813	-0.1002	1.9546	-0.1167	1.9522	-0.1730	1.4793	-0.1483
KA, SEG =	3 22	-1.4813	-0.1002	-1.9546	-0.1167	-1.9522	-0.1730	-1.4793	-0.1483
KA, SEG =	4 22	-1.4813	0.1002	-1.9546	0.1167	-1.9522	0.1730	-1.4793	0.1483
KA, SEG =	1 23	1.4773	0.1482	1.9502	0.1729	1.9469	0.2291	1.4744	0.1962
KA, SEG =	2 23	1.4773	-0.1482	1.9502	-0.1729	1.9469	-0.2291	1.4744	-0.1962
KA, SEG =	3 23	-1.4773	-0.1482	-1.9502	-0.1729	-1.9469	-0.2291	-1.4744	-0.1962
KA, SEG =	4 23	-1.4773	0.1482	-1.9502	0.1729	-1.9469	0.2291	-1.4744	0.1962
KA, SEG =	1 24	1.4717	0.1961	1.9442	0.2289	1.9398	0.2851	1.4680	0.2441
KA, SEG =	2 24	1.4717	-0.1961	1.9442	-0.2289	1.9398	-0.2851	1.4680	-0.2441
KA, SEG =	3 24	-1.4717	-0.1961	-1.9442	-0.2289	-1.9398	-0.2851	-1.4680	-0.2441
KA, SEG =	4 24	-1.4717	0.1961	-1.9442	0.2289	-1.9398	0.2851	-1.4680	0.2441
KA, SEG =	1 25	1.4646	0.2437	1.9364	0.2848	1.9311	0.3410	1.4601	0.2917
KA, SEG =	2 25	1.4646	-0.2437	1.9364	-0.2848	1.9311	-0.3410	1.4601	-0.2917
KA, SEG =	3 25	-1.4646	-0.2437	-1.9364	-0.2848	-1.9311	-0.3410	-1.4601	-0.2917
KA, SEG =	4 25	-1.4646	0.2437	-1.9364	0.2848	-1.9311	0.3410	-1.4601	0.2917
KA, SEG =	1 26	1.4559	0.2912	1.9269	0.3405	1.9206	0.3965	1.4505	0.3391
KA, SEG =	2 26	1.4559	-0.2912	1.9269	-0.3405	1.9206	-0.3965	1.4505	-0.3391
KA, SEG =	3 26	-1.4559	-0.2912	-1.9269	-0.3405	-1.9206	-0.3965	-1.4505	-0.3391
KA, SEG =	4 26	-1.4559	0.2912	-1.9269	0.3405	-1.9206	0.3965	-1.4505	0.3391
KA, SEG =	1 27	1.4456	0.3385	1.9157	0.3959	1.9084	0.4518	1.4395	0.3862
KA, SEG =	2 27	1.4456	-0.3385	1.9157	-0.3959	1.9084	-0.4518	1.4395	-0.3862
KA, SEG =	3 27	-1.4456	-0.3385	-1.9157	-0.3959	-1.9084	-0.4518	-1.4395	-0.3862
KA, SEG =	4 27	-1.4456	0.3385	-1.9157	0.3959	-1.9084	0.4518	-1.4395	0.3862
KA, SEG =	1 28	1.4338	0.3855	1.9028	0.4510	1.8946	0.5068	1.4269	0.4331
KA, SEG =	2 28	1.4338	-0.3855	1.9028	-0.4510	1.8946	-0.5068	1.4269	-0.4331
KA, SEG =	3 28	-1.4338	-0.3855	-1.9028	-0.4510	-1.8946	-0.5068	-1.4269	-0.4331
KA, SEG =	4 28	-1.4338	0.3855	-1.9028	0.4510	-1.8946	0.5068	-1.4269	0.4331
KA, SEG =	1 29	1.4204	0.4321	1.8882	0.5058	1.8790	0.5614	1.4127	0.4796
KA, SEG =	2 29	1.4204	-0.4321	1.8882	-0.5058	1.8790	-0.5614	1.4127	-0.4796
KA, SEG =	3 29	-1.4204	-0.4321	-1.8882	-0.5058	-1.8790	-0.5614	-1.4127	-0.4796
KA, SEG =	4 29	-1.4204	0.4321	-1.8882	0.5058	-1.8790	0.5614	-1.4127	0.4796
KA, SEG =	1 30	1.4055	0.4784	1.8719	0.5602	1.8618	0.6157	1.3970	0.5258
KA, SEG =	2 30	1.4055	-0.4784	1.8719	-0.5602	1.8618	-0.6157	1.3970	-0.5258
KA, SEG =	3 30	-1.4055	-0.4784	-1.8719	-0.5602	-1.8618	-0.6157	-1.3970	-0.5258
KA, SEG =	4 30	-1.4055	0.4784	-1.8719	0.5602	-1.8618	0.6157	-1.3970	0.5258
KA, SEG =	1 31	1.3779	0.5563	1.8114	0.7470	1.7881	0.7984	1.3580	0.6001
KA, SEG =	2 31	1.3779	-0.5563	1.8114	-0.7470	1.7881	-0.7984	1.3580	-0.6001
KA, SEG =	3 31	-1.3779	-0.5563	-1.8114	-0.7470	-1.7881	-0.7984	-1.3580	-0.6001
KA, SEG =	4 31	-1.3779	0.5563	-1.8114	0.7470	-1.7881	0.7984	-1.3580	0.6001

KA, SEG =	1	32	1.3585	0.6003	1.7886	0.7986	1.7645	0.8495	1.3379	0.6438
KA, SEG =	2	32	1.3585	-0.6003	1.7886	-0.7986	1.7645	-0.8495	1.3379	-0.6438
KA, SEG =	3	32	-1.3585	-0.6003	-1.7886	-0.7986	-1.7645	-0.8495	-1.3379	-0.6438
KA, SEG =	4	32	-1.3585	0.6003	-1.7886	0.7986	-1.7645	0.8495	-1.3379	0.6438
KA, SEG =	1	33	1.3379	0.6438	1.7645	0.8495	1.7394	0.9000	1.3165	0.6869
KA, SEG =	2	33	1.3379	-0.6438	1.7645	-0.8495	1.7394	-0.9000	1.3165	-0.6869
KA, SEG =	3	33	-1.3379	-0.6438	-1.7645	-0.8495	-1.7394	-0.9000	-1.3165	-0.6869
KA, SEG =	4	33	-1.3379	0.6438	-1.7645	0.8495	-1.7394	0.9000	-1.3165	0.6869
KA, SEG =	1	34	1.3163	0.6868	1.7393	0.8999	1.7134	0.9500	1.2942	0.7296
KA, SEG =	2	34	1.3163	-0.6868	1.7393	-0.8999	1.7134	-0.9500	1.2942	-0.7296
KA, SEG =	3	34	-1.3163	-0.6868	-1.7393	-0.8999	-1.7134	-0.9500	-1.2942	-0.7296
KA, SEG =	4	34	-1.3163	0.6868	-1.7393	0.8999	-1.7134	0.9500	-1.2942	0.7296
KA, SEG =	1	35	1.2933	0.7291	1.7126	0.9496	1.6858	0.9992	1.2705	0.7715
KA, SEG =	2	35	1.2933	-0.7291	1.7126	-0.9496	1.6858	-0.9992	1.2705	-0.7715
KA, SEG =	3	35	-1.2933	-0.7291	-1.7126	-0.9496	-1.6858	-0.9992	-1.2705	-0.7715
KA, SEG =	4	35	-1.2933	0.7291	-1.7126	0.9496	-1.6858	0.9992	-1.2705	0.7715
KA, SEG =	1	36	1.2690	0.7707	1.6843	0.9984	1.6568	1.0475	1.2454	0.8127
KA, SEG =	2	36	1.2690	-0.7707	1.6843	-0.9984	1.6568	-1.0475	1.2454	-0.8127
KA, SEG =	3	36	-1.2690	-0.7707	-1.6843	-0.9984	-1.6568	-1.0475	-1.2454	-0.8127
KA, SEG =	4	36	-1.2690	0.7707	-1.6843	0.9984	-1.6568	1.0475	-1.2454	0.8127
KA, SEG =	1	37	1.2433	0.8115	1.6547	1.0463	1.6262	1.0950	1.2191	0.8530
KA, SEG =	2	37	1.2433	-0.8115	1.6547	-1.0463	1.6262	-1.0950	1.2191	-0.8530
KA, SEG =	3	37	-1.2433	-0.8115	-1.6547	-1.0463	-1.6262	-1.0950	-1.2191	-0.8530
KA, SEG =	4	37	-1.2433	0.8115	-1.6547	1.0463	-1.6262	1.0950	-1.2191	0.8530
KA, SEG =	1	38	1.2163	0.8514	1.6235	1.0934	1.5943	1.1415	1.1914	0.8925
KA, SEG =	2	38	1.2163	-0.8514	1.6235	-1.0934	1.5943	-1.1415	1.1914	-0.8925
KA, SEG =	3	38	-1.2163	-0.8514	-1.6235	-1.0934	-1.5943	-1.1415	-1.1914	-0.8925
KA, SEG =	4	38	-1.2163	0.8514	-1.6235	1.0934	-1.5943	1.1415	-1.1914	0.8925
KA, SEG =	1	39	1.1880	0.8905	1.5909	1.1395	1.5609	1.1872	1.1623	0.9312
KA, SEG =	2	39	1.1880	-0.8905	1.5909	-1.1395	1.5609	-1.1872	1.1623	-0.9312
KA, SEG =	3	39	-1.1880	-0.8905	-1.5909	-1.1395	-1.5609	-1.1872	-1.1623	-0.9312
KA, SEG =	4	39	-1.1880	0.8905	-1.5909	1.1395	-1.5609	1.1872	-1.1623	0.9312
KA, SEG =	1	40	1.1584	0.9287	1.5570	1.1846	1.5261	1.2318	1.1320	0.9689
KA, SEG =	2	40	1.1584	-0.9287	1.5570	-1.1846	1.5261	-1.2318	1.1320	-0.9689
KA, SEG =	3	40	-1.1584	-0.9287	-1.5570	-1.1846	-1.5261	-1.2318	-1.1320	-0.9689
KA, SEG =	4	40	-1.1584	0.9287	-1.5570	1.1846	-1.5261	1.2318	-1.1320	0.9689
KA, SEG =	1	41	1.1275	0.9659	1.5216	1.2288	1.4899	1.2754	1.1005	1.0057
KA, SEG =	2	41	1.1275	-0.9659	1.5216	-1.2288	1.4899	-1.2754	1.1005	-1.0057
KA, SEG =	3	41	-1.1275	-0.9659	-1.5216	-1.2288	-1.4899	-1.2754	-1.1005	-1.0057
KA, SEG =	4	41	-1.1275	0.9659	-1.5216	1.2288	-1.4899	1.2754	-1.1005	1.0057
KA, SEG =	1	42	1.0954	1.0022	1.4848	1.2719	1.4523	1.3179	1.0677	1.0416
KA, SEG =	2	42	1.0954	-1.0022	1.4848	-1.2719	1.4523	-1.3179	1.0677	-1.0416
KA, SEG =	3	42	-1.0954	-1.0022	-1.4848	-1.2719	-1.4523	-1.3179	-1.0677	-1.0416
KA, SEG =	4	42	-1.0954	1.0022	-1.4848	1.2719	-1.4523	1.3179	-1.0677	1.0416
KA, SEG =	1	43	1.0620	1.0375	1.4467	1.3139	1.4134	1.3594	1.0336	1.0764
KA, SEG =	2	43	1.0620	-1.0375	1.4467	-1.3139	1.4134	-1.3594	1.0336	-1.0764
KA, SEG =	3	43	-1.0620	-1.0375	-1.4467	-1.3139	-1.4134	-1.3594	-1.0336	-1.0764
KA, SEG =	4	43	-1.0620	1.0375	-1.4467	1.3139	-1.4134	1.3594	-1.0336	1.0764
KA, SEG =	1	44	1.0274	1.0718	1.4072	1.3548	1.3732	1.3997	0.9984	1.1102
KA, SEG =	2	44	1.0274	-1.0718	1.4072	-1.3548	1.3732	-1.3997	0.9984	-1.1102
KA, SEG =	3	44	-1.0274	-1.0718	-1.4072	-1.3548	-1.3732	-1.3997	-0.9984	-1.1102
KA, SEG =	4	44	-1.0274	1.0718	-1.4072	1.3548	-1.3732	1.3997	-0.9984	1.1102
KA, SEG =	1	45	0.9917	1.1050	1.3665	1.3945	1.3317	1.4388	0.9620	1.1429
KA, SEG =	2	45	0.9917	-1.1050	1.3665	-1.3945	1.3317	-1.4388	0.9620	-1.1429
KA, SEG =	3	45	-0.9917	-1.1050	-1.3665	-1.3945	-1.3317	-1.4388	-0.9620	-1.1429
KA, SEG =	4	45	-0.9917	1.1050	-1.3665	1.3945	-1.3317	1.4388	-0.9620	1.1429