

Effects of Multipole Errors on Dynamic Aperture of ILSF

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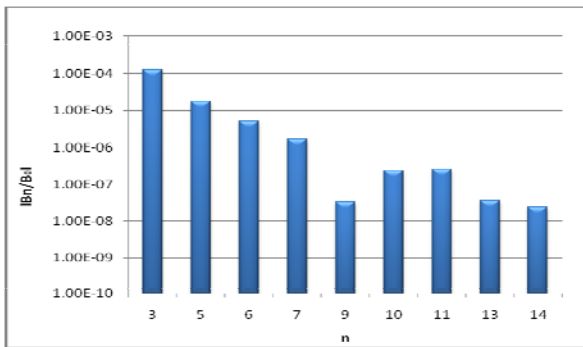
➤ ABSTRACT

Multipole errors in magnetic elements can reduce the dynamic aperture by generating of high order resonances. The ILSF dynamic aperture in the presence of magnetic multipoles in the main magnets was simulated by BETA tracking code.

➤ SYS. MULTIPOLE ERRORS OF DIPOLES

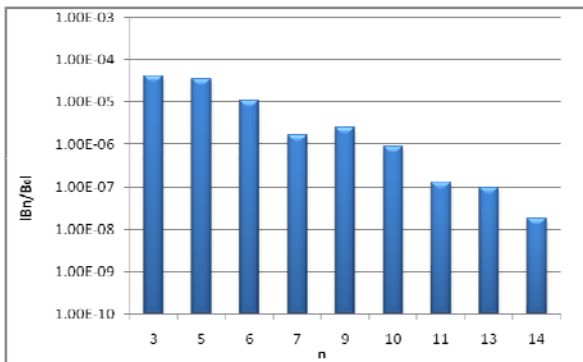
BE1.

n	Pole	b_n [T/m ⁿ⁻¹]	$\Delta B/B$	Kicked(Rad)
3	6-Pole	-1.73E+00	-1.26E-04	-2.40E-05
5	10-Pole	-2.39E+03	-1.73E-05	-3.31E-06
6	12-Pole	-6.97E+04	-5.05E-06	-9.65E-07
7	14-Pole	-2.28E+06	-1.65E-06	-3.15E-07
9	18-Pole	-4.61E+08	-3.34E-08	-6.38E-09
10	20-Pole	3.35E+11	2.43E-07	4.63E-08
11	22-Pole	-3.58E+13	-2.60E-07	-4.96E-08
13	26-Pole	4.94E+16	3.58E-08	6.83E-09
14	28-Pole	-3.30E+18	-2.39E-08	-4.57E-09



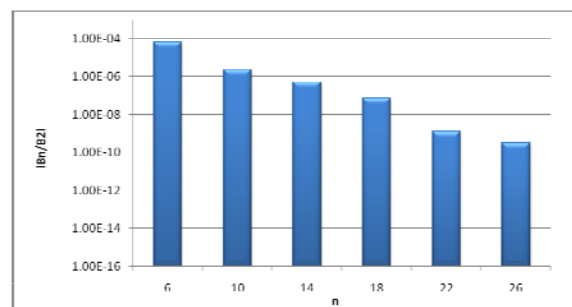
BE2.

n	Pole	b_n [T/m ⁿ⁻¹]	$\Delta B/B$	Kicked(Rad)
3	6-Pole	5.79E-01	4.25E-05	8.01E-06
5	10-Pole	4.99E+03	3.66E-05	6.91E-06
6	12-Pole	1.49E+05	1.09E-05	2.07E-06
7	14-Pole	2.25E+06	1.65E-06	3.12E-07
9	18-Pole	-3.39E+10	-2.49E-06	-4.70E-07
10	20-Pole	1.21E+12	8.90E-07	1.68E-07
11	22-Pole	1.76E+13	1.29E-07	2.43E-08
13	26-Pole	-1.32E+17	-9.69E-08	-1.83E-08
14	28-Pole	2.48E+18	1.82E-08	3.44E-09



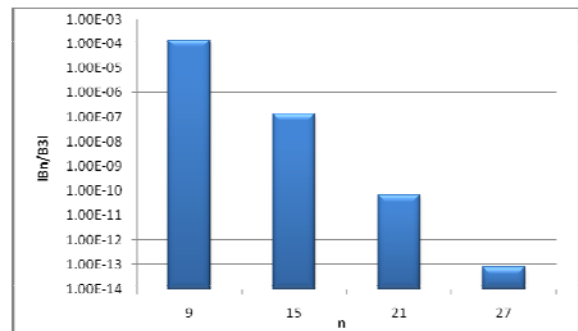
➤ SYS. MULTIPOLE ERRORS OF QUADRUPOLES

n	Poles	b_n [T/m ⁿ⁻¹]	$\Delta B/B$	Kick(Rad)
6	12-pole	1.49E+04	6.77E-05	1.487E-06
10	20-pole	4.96E+09	2.37E-06	5.209E-08
14	28-pole	-1.01E+16	-5.05E-07	-1.109E-08
18	36-pole	-1.37E+22	-7.22E-08	-1.585E-09
22	44-pole	-2.30E+27	-1.27E-09	-2.796E-11
26	52-pole	-5.41E+33	-3.14E-10	-6.902E-12



➤ SYS. MULTIPOLE ERRORS OF SEXTUPOLES

n	Poles	b_n [T/m ⁿ⁻¹]	$\Delta B/B$	Kick(Rad)
9	18-pole	-1.608E+10	-1.372E-04	-1.52E-07
15	30-pole	-5.267E+18	-1.342E-07	-1.49E-10
21	41-pole	8.866E+26	6.7443E-11	7.47E-14
27	54-pole	3.435E+35	7.802E-14	8.65E-17



➤ SYS. MULTIPOLE ERRORS OF ALL MAGNETS-DA

