

eRHIC Permanent Magnet Quadrupole PMQ_005A (19-Oct-2015)

Field harmonics are in "units" of 10^{-4} of the quadrupole field at a reference radius of 10 mm.

Quantity	PMQ_005A* Run 1_02(+)	PMQ_005A* Run 3(++)	PMQ_005A* Run 4(++)
Integrated Gradient (T)	1.6501	1.6537	1.6559
Normal Dipole	--	--	--
Normal Quadrupole	10000.00	10000.00	10000.00
Normal Sextupole	-19.46	0.87	-4.90
Normal Octupole	5.61	3.12	-1.53
Normal Decapole	-0.99	-0.32	-0.55
Normal Dodecapole	-1.03	0.55	-0.68
Normal 14-pole	1.25	-0.03	0.01
Normal 16-pole	-1.47	-0.24	0.35
Normal 18-pole	0.12	0.05	0.15
Normal 20-pole	0.44	-0.01	-0.12
Normal 22-pole	-0.03	0.01	0.06
Normal 24-pole	0.05	-0.09	-0.10
Normal 26-pole	-0.01	-0.03	-0.10
Normal 28-pole	-0.12	0.02	0.02
Normal 30-pole	0.00	0.00	0.05

Quantity	PMQ_005A* Run 1_02(+)	PMQ_005A* Run 3(++)	PMQ_005A* Run 4(++)
Field Angle (mr)	--	--	--
Skew Dipole	--	--	--
Skew Quadrupole	--	--	--
Skew Sextupole	-6.42	-1.92	-3.81
Skew Octupole	-21.20	-1.45	0.39
Skew Decapole	-4.02	-0.70	0.62
Skew Dodecapole	0.22	-1.07	0.82
Skew 14-pole	0.07	-0.51	0.30
Skew 16-pole	-0.31	-0.30	0.62
Skew 18-pole	-0.05	-0.22	0.00
Skew 20-pole	0.24	0.00	-0.13
Skew 22-pole	0.00	0.06	-0.10
Skew 24-pole	-0.01	-0.03	0.03
Skew 26-pole	0.00	0.00	0.11
Skew 28-pole	0.00	0.02	0.12
Skew 30-pole	0.00	0.00	0.04

* PMQ_005A is magnet built from magnets taken from PMQ_0005 and installed in a modified holder to reduce 12-pole

(†) Magnet was measured with the magnet rotated 90 deg. about its axis, and flipped end-for-end, as compared to its marked orientation. The data were transformed in post-processing to correspond to the correct orientation.

(††) Runs 3 & 4 are measurement in PMQ_005A with two iterations of iron shims to reduce unallowed field harmonics.

(Note: Magnet name used for tesing was ERHIC-PMQ_0105 to avoid non-numeric serial number).