



Iteration on length of high order correctors

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LAYOUT

- Iteration on the corrector strength is needed
 - Summary of strength used in the baseline

Multipole	Intgrated gradient (T m)	(units)	Magnet length (m)
a_2	1	50	0.841
a_3, b_3	0.063	3	0.123
a_4, b_4	0.046	2.2	0.990
a_5, b_5	0.025	1.7	0.107
b_6	0.086	3.2	0.449
a_6	0.017	0.8	0.102

- Larger a_4, b_5 , M. Giovannozzi team shows that we are at 87% of the nominal force for order 4 and 5
- Best estimates of field quality are based on 3 short models
 - We see large values of a_4 and b_5 about 2-3 times larger than our tables
- We should act now – no time to have more data from long models

LAYOUT

- Explored possibilities
 - <https://indico.cern.ch/event/707076/> (February 2018)
 - 50% more current to get 30% more strength
 - Viable, but does not look as best option: much lower margin, and limited effect
 - 30% more length to get 50% more strength
 - Protection ok, 320 mm more in the cold mass if we also increase order 3
 - We are working to this new baseline
 - Seems to fit in the cold mass – no impact on the other magnets
- Decision by April, call for tender for series is being prepared (contract to be signed in January 2019)
 - Impact on costs is less than 5%, for the moment in the noise

LAYOUT

- Skew and normal should be kept of the same length to avoid different variant and reduce spare number
 - Summary of proposal

Multipole	New integrated gradient (T m)	Length increase (m)	Magnet length (m)
a_2	1	unchanged	0.841
a_3, b_3	0.095	+0.060	0.183
a_4, b_4	0.069	+0.050	1.040
a_5, b_5	0.037	+0.050	0.157
b_6	0.086	unchanged	0.449
a_6	0.017	unchanged	0.102