VOODOO CORRECTOR HARMONIC LIMITS

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	X1, X2 Dipoles 0.48 T.m @ 1" [$\|b_n\|$, $\|a_n\|$] **max** (units)	X1 Sextupole 0.145 T.m @ 1" [$\|b_n\|$, $\|a_n\|$] **max** (units)
b0		60
a0		60
b1	50	50
a1	50	50
b2	100	
a2		

	X3 Dipoles 0.48 T.m @ 1" [$\|b_n\|$, $\|a_n\|$] **max** (units)	X3 Skew Quad 0.190 T.m @ 1" [$\|b_n\|$, $\|a_n\|$] **max** (units)
b0		10
a0		10
b1	15	60
a1	15	
b2	40	
a2		

- These limits on multipoles cause distortion of the 95% 20π beam envelope at the IP during collisions by ≤ 1 mm in β_x^* & β_y^* and/or ≤ 1 μm in x* & y* — there should be no noticeable hit on luminosity & no need to retune the linear IR optics.

- **N.B:** These harmonic limits were calculated assuming absolutely the worst-case conditions & undoubtedly can be relaxed significantly:

  (i) The X1, X2 dipoles were all running flat out at 0.48 T.m simultaneously to obtain the dipole corrector limits;
  (ii) Likewise, all X1 sextupoles were at full strength at once;
  (iii) X3 correctors were at full field — in the real world this would indicate something was seriously wrong with the triplet alignment & the IR optics would be re-tuned until the problem could be fixed.