

- HLLHC lattice version 1.3
- 60/15cm flat optics (worst case scenario)
- 500 seeds with uniform 1 mrad (baseline) and 2 mrad roll error in IR1 and IR5 triplets and Q4,Q5.
- Randomly chosen 60 seeds of IR nonlinear errors in: b3, a3, b4, a4, b5, a5, b6, a6.
- 250 μrad crossing angle.

Skew quadrupoles strength requirements

- Max seed at 0.001 rads: $0.23 \cdot 10^{-3}m^{-2}$
- Max seed at 0.002 rads: $0.44 \cdot 10^{-3}m^{-2}$
- Max LHC correction: $1.4 \cdot 10^{-3}m^{-2}$, scaled to HL length: $0.38 \cdot 10^{-3}m^{-2}$
- Length of MQSX in LHC: 0.223m, in HL-LHC: 0.807m
- Current max HL strength: $10^{-3}m^{-2}$
- Max KL LHC $0.82 \cdot 10^{-3}m^{-1}$, HL-LHC $0.81 \cdot 10^{-3}m^{-1}$
- A margin of factor 2 should be accounted for in case one of the a2 correctors breaks.

