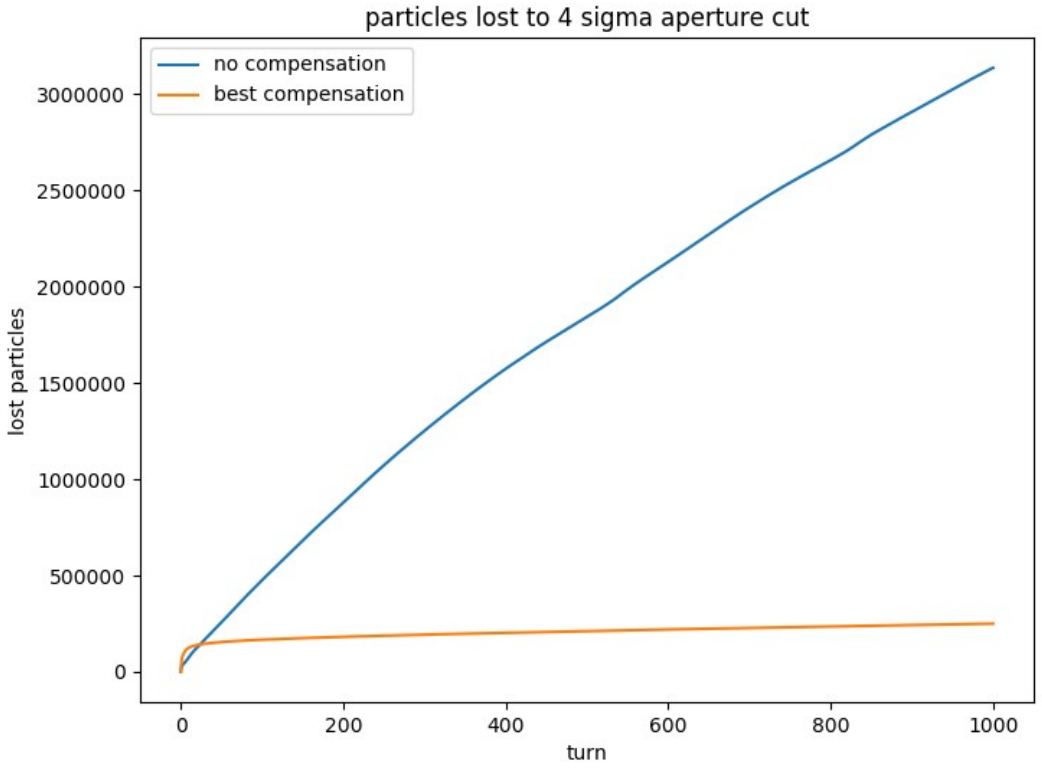
Particles cut by 4 sigma aperture

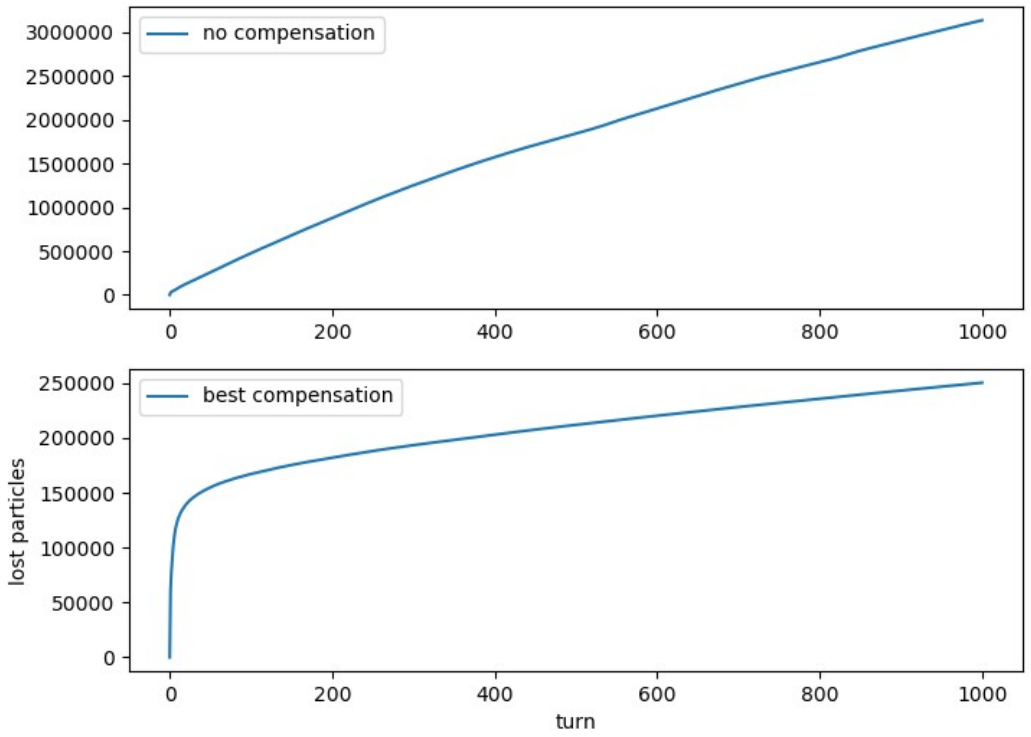


16M initial particles

No compensation: 3.1 M cut (19%)
Almost all after the first turn.

Optimal compensation: 0.25 M cut (1.6%)
1.2% cut after first turn.

Particles cut by 4 sigma aperture

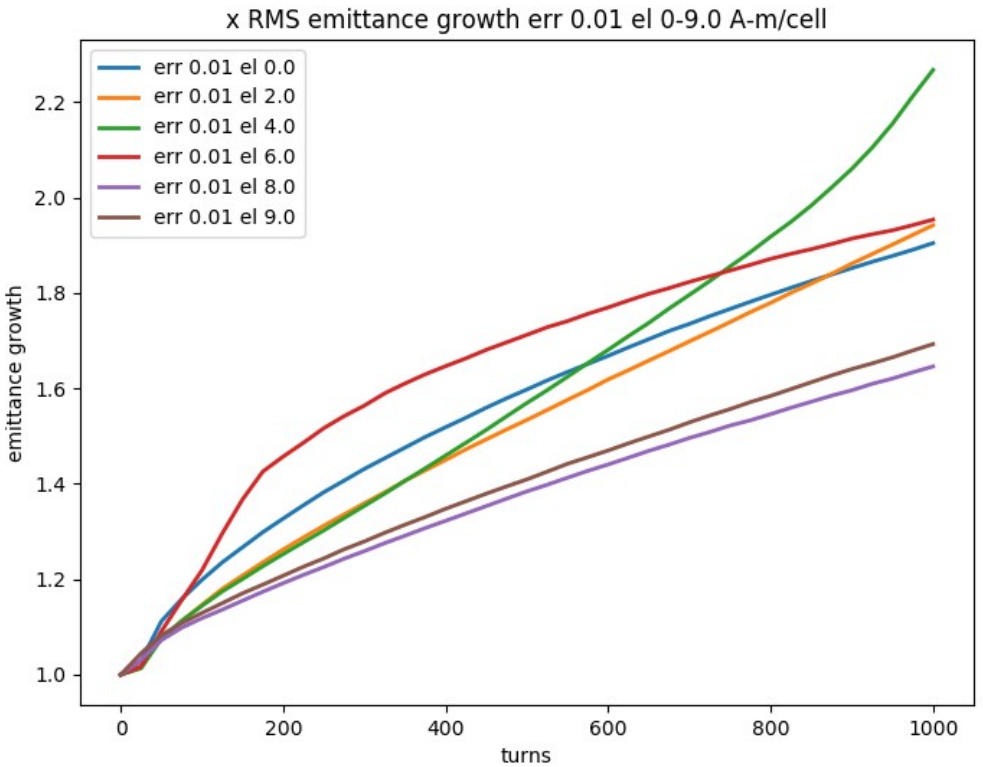


Investigate compensation without longitudinal shaping

12 FODO cells, phase advance/cell 111.6°
1% lattice error, tunes readjusted to original 3.72,3.84
SC tune shift 0.9

1 lens/cell, fixed gaussian profile at initial RMS = 4.15 mm
Naive calculation requires 107 A-m (8.9/lens) electron current to compensate SC

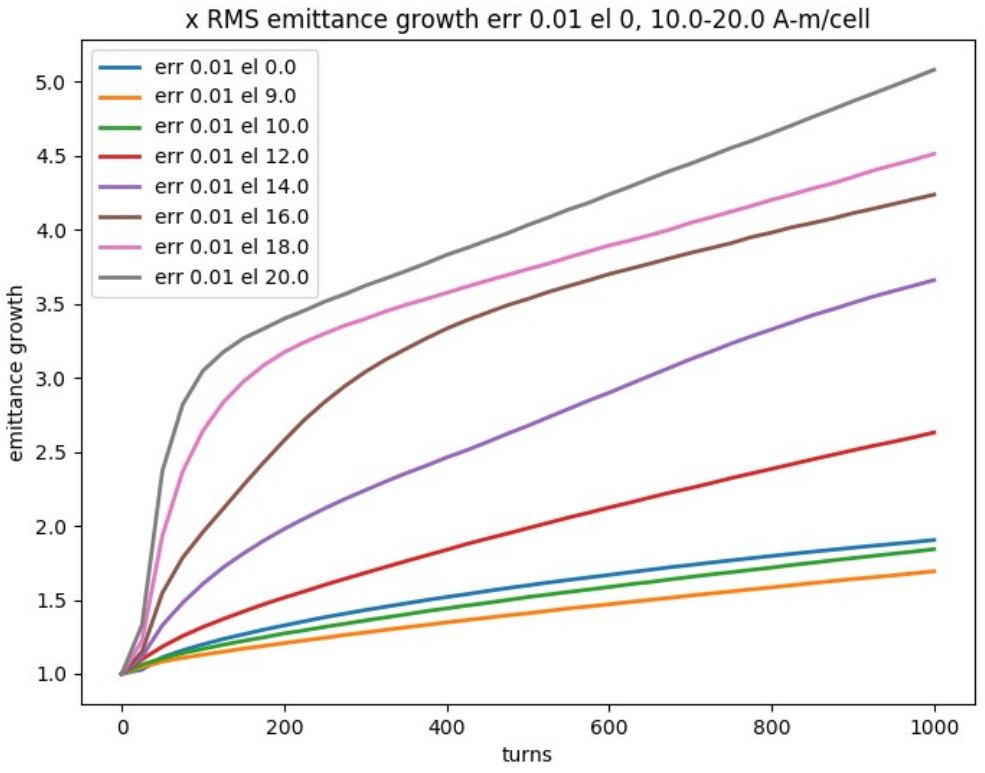
RMS emittance with fixed lens compensation 0-9 A-m



Best compensation is at 8.0 A-m but only lowers emittance growth from 90% to 60%.

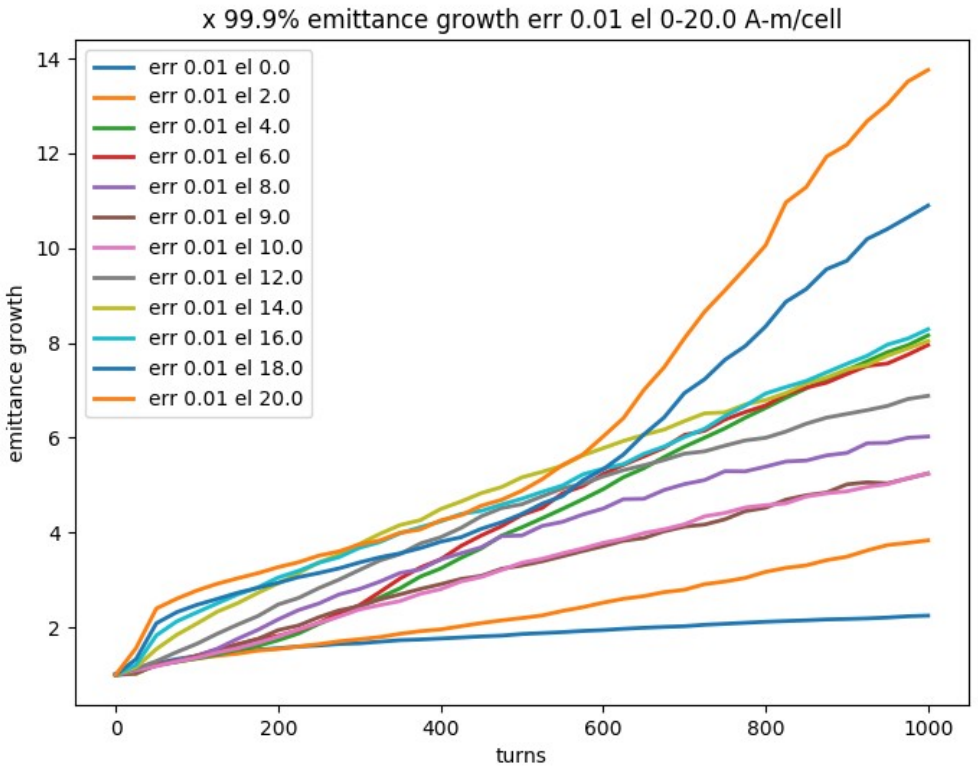
Lens appears to excite a resonance around 4.0 A-m.

RMS emittance with fixed lens compensation



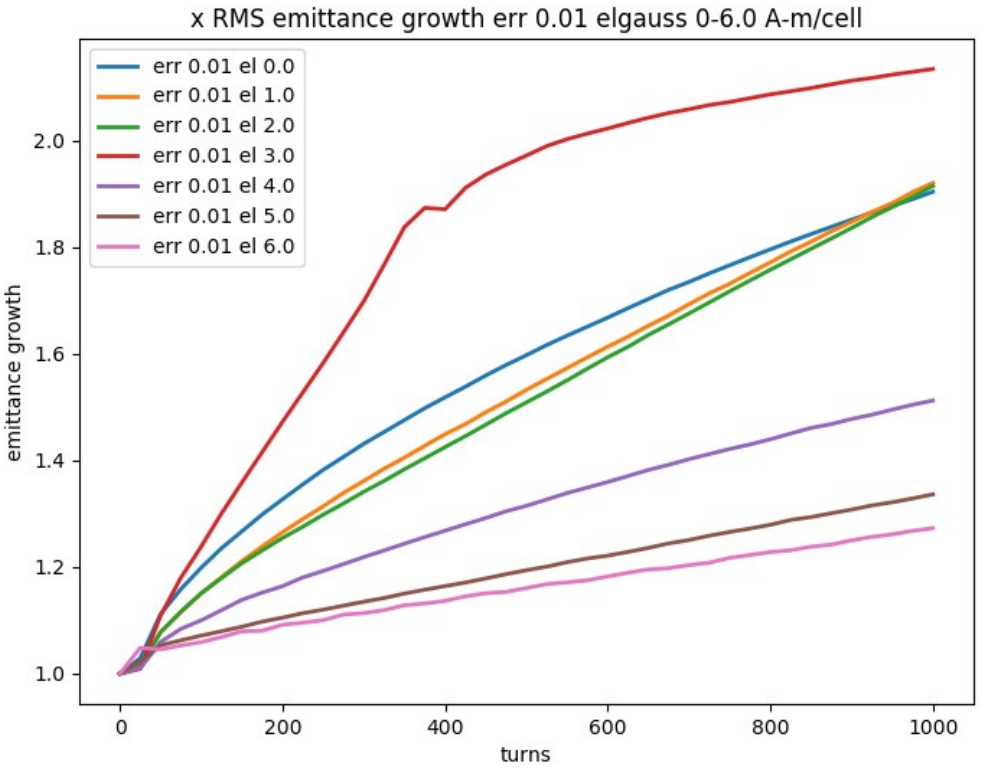
Emittance growth is larger for lens strength above 9 A-m.

99.9% emittance growth



The 99.9% emittance increases for any value of compensation

RMS emittance growth with longitudinal shaped lens

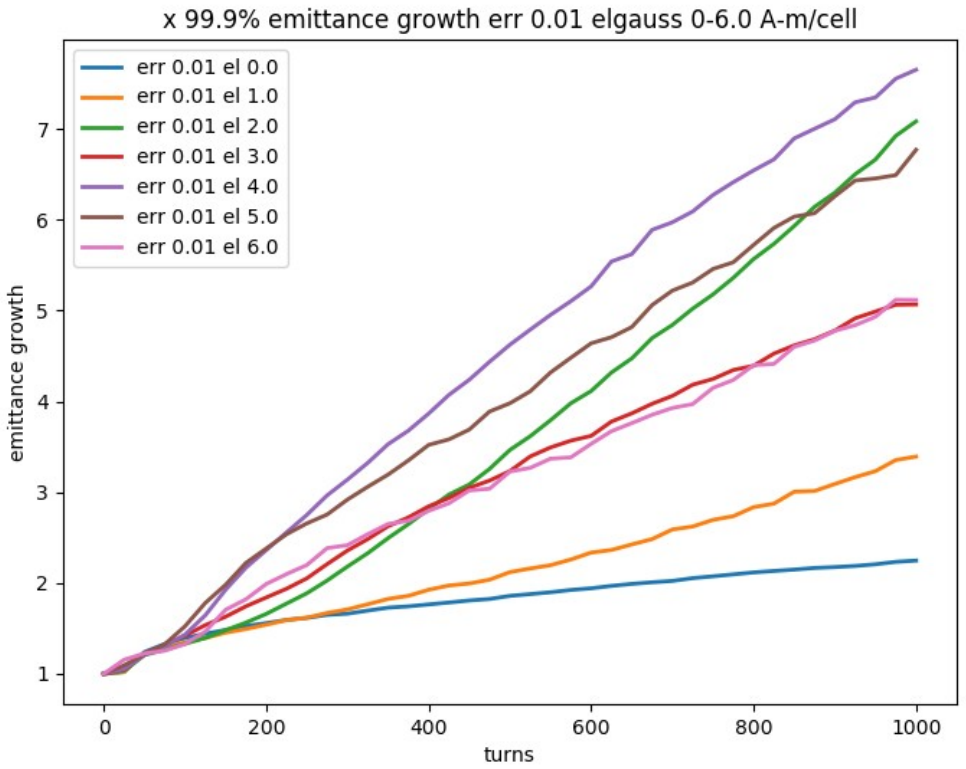


Best value is 6.0 A-m, but jobs with higher strengths have not run yet.

Emittance growth improved from 90% to 25% with compensation.

Apparent resonance at 3.0 A-m.

99.9% emitance growth with longitudinally shaped lens



99.9% emittance is worse at any level of compensation