Comparison of two Hard Aperture Limits: 6 and 20 Beam Sigma.

(A. Valishev, Runs are continuing)

Model parameters:

- Number of particles: 5000
- Beam-beam parameter per interaction point: 0.0075
- Betatron tunes: 0.57, 0.56 (x,y)
- Betatron tune chromaticity: +20
- Noise matrix: 1.0e-12, 8.1e-16, 1.0e-12, 8.1e-16, 0, 1.5e-15 (x,px,y,py,z,dp/p)
- Tracking time: 4,000,000 turns
- Design optics

"Hard aperture" is the maximum amplitude in terms of initial beam sigma at which the particle is considered "stable". In this series of runs we compare two settings: 20, 20, 20 (x,y,z) and 6, 6, 20 which is more realistic for the case of Tevatron.

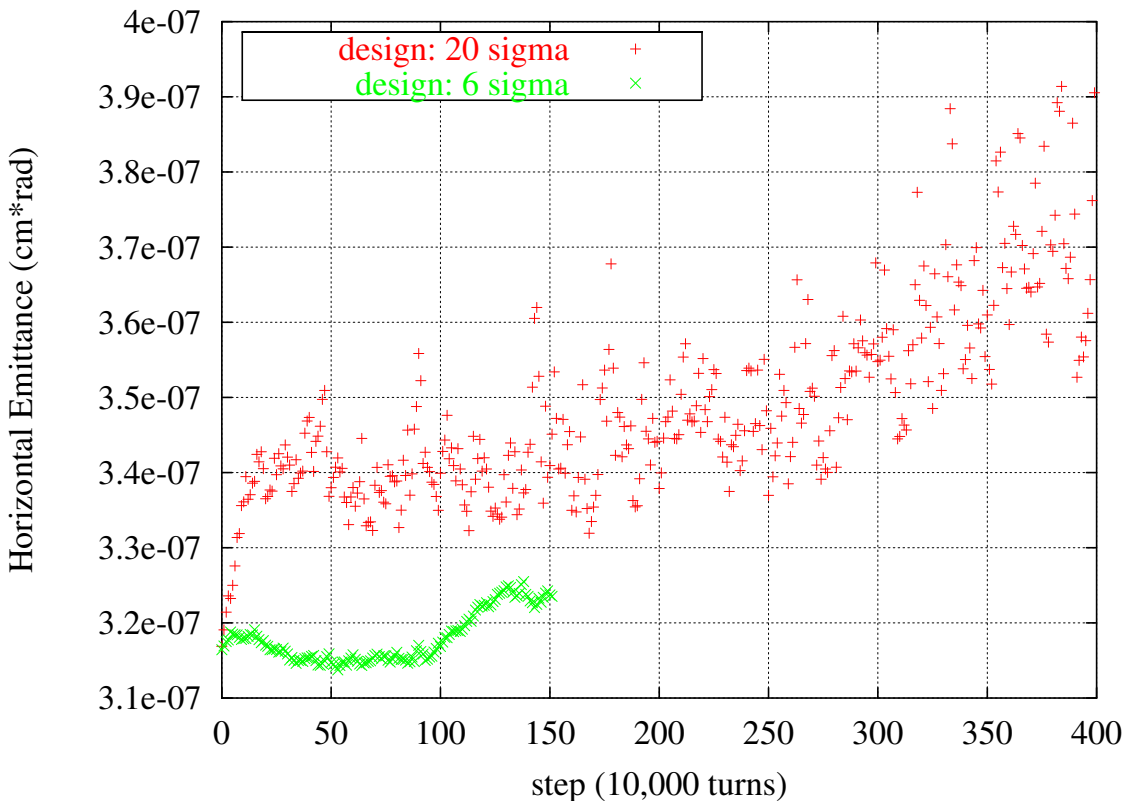

Figure 1. Evolution of the horizontal emittance.

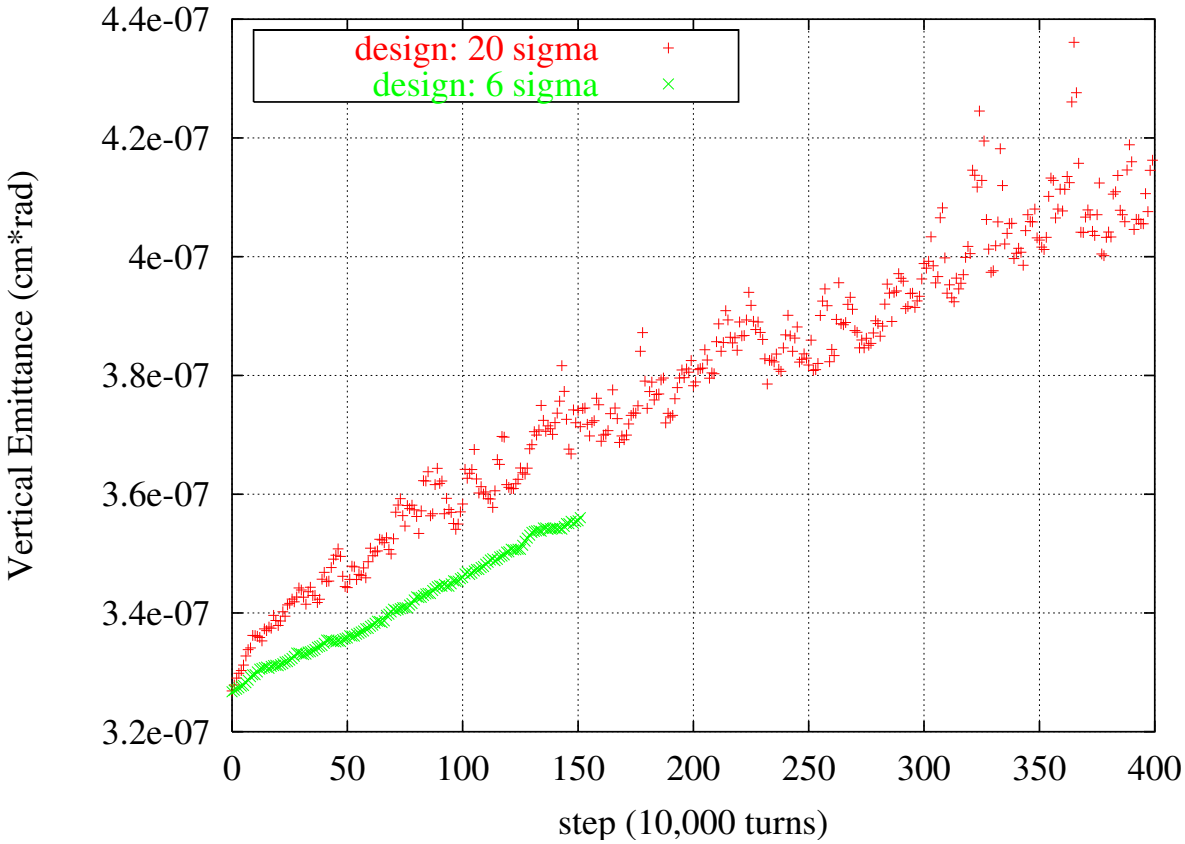

Figure 2. Evolution of the vertical emittance.

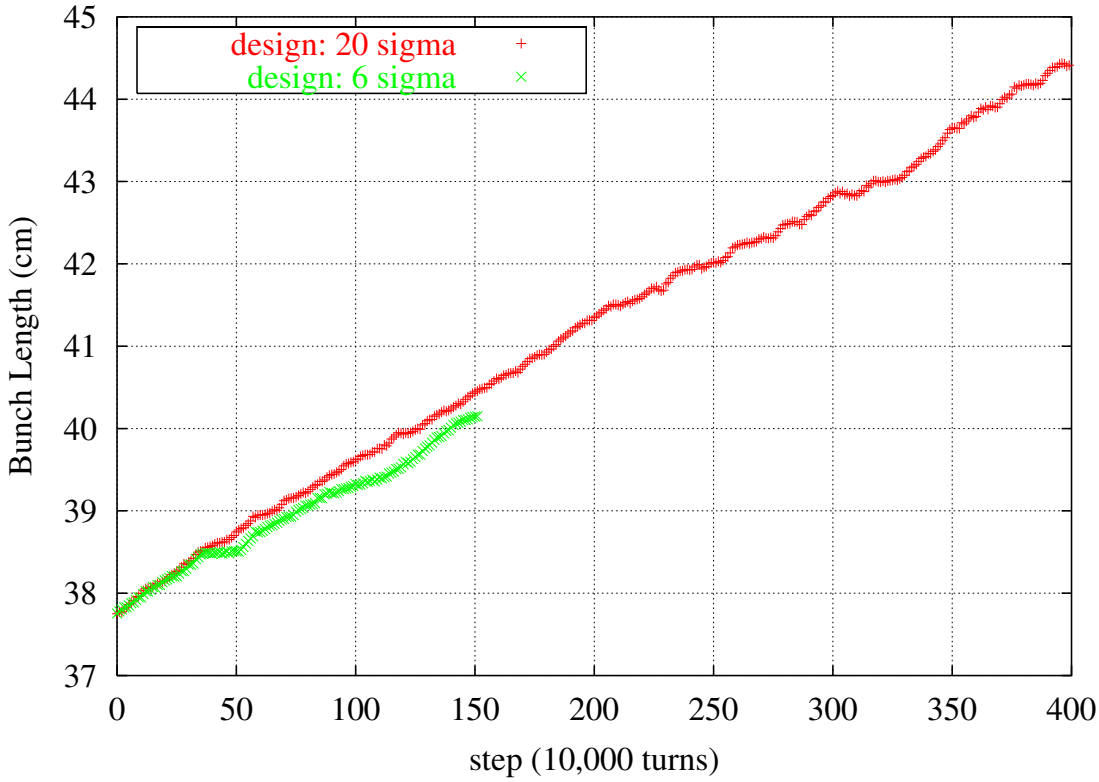

Figure 3. Evolution of the longitudinal beam size.

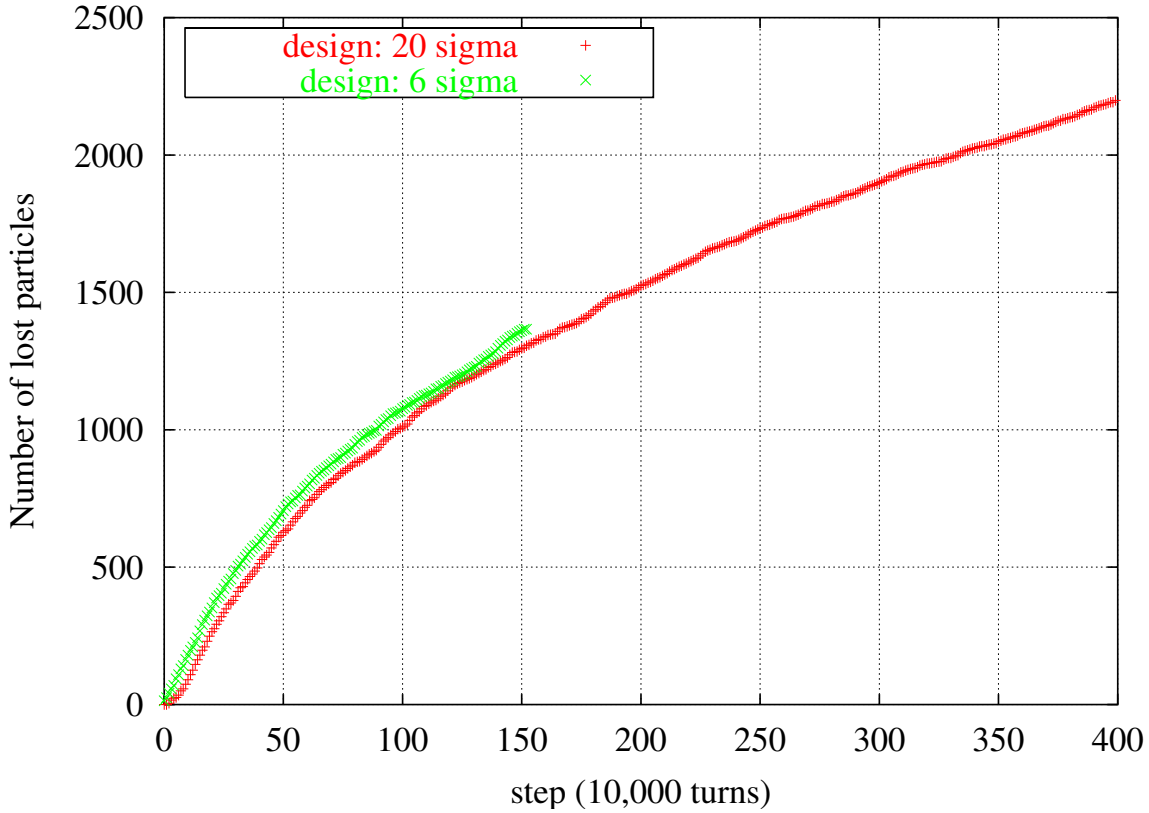

Figure 4. Total number of lost particles vs. turn number.

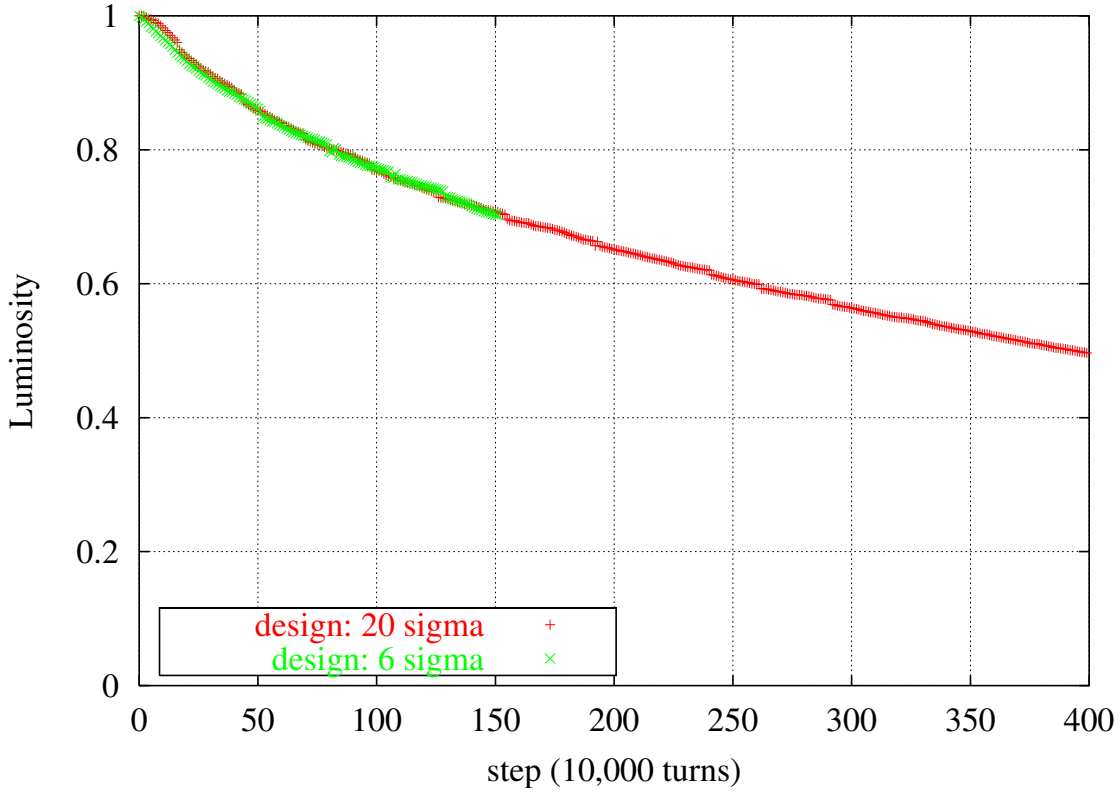

Figure 5. Specific luminosity vs. turn number.