GEANT-3.21 Simulation of the Balbekov Square Cooling Ring

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Ring Cooler/Emittance Exchange group meeting.

Tuesday, March 4.

Initial beam conditions

1) $E_{tot} = 250\ MeV$

2) $\sigma_{E_{tot}} = 18\ MeV$

3) $\sigma_{P_x} = \sigma_{P_y} = 32\ MeV$

4) $\sigma_x = \sigma_y = 4\ cm$

5) $\sigma_z = 8\ cm$

energy-momentum correlation according
V.B. MUC-NOTE-COOL_THEORY-246

and few parameters

6) $f_{RF} = 198.544\ MHz$

7) $G = 15\ MV/m$

synchronous phase for accel. $= 30^0$

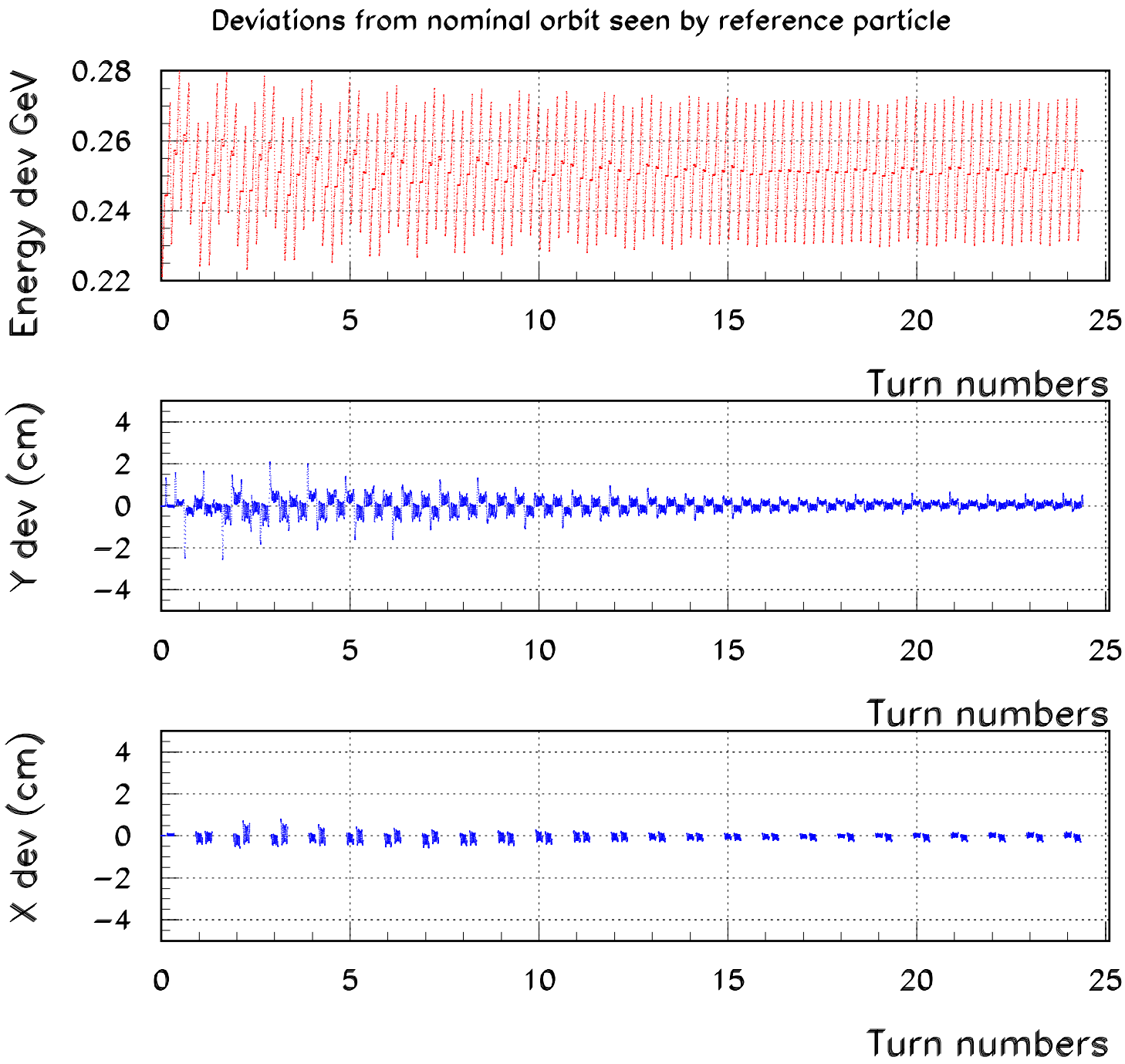

Figure 1: Cooling for particle when E += 1σ.

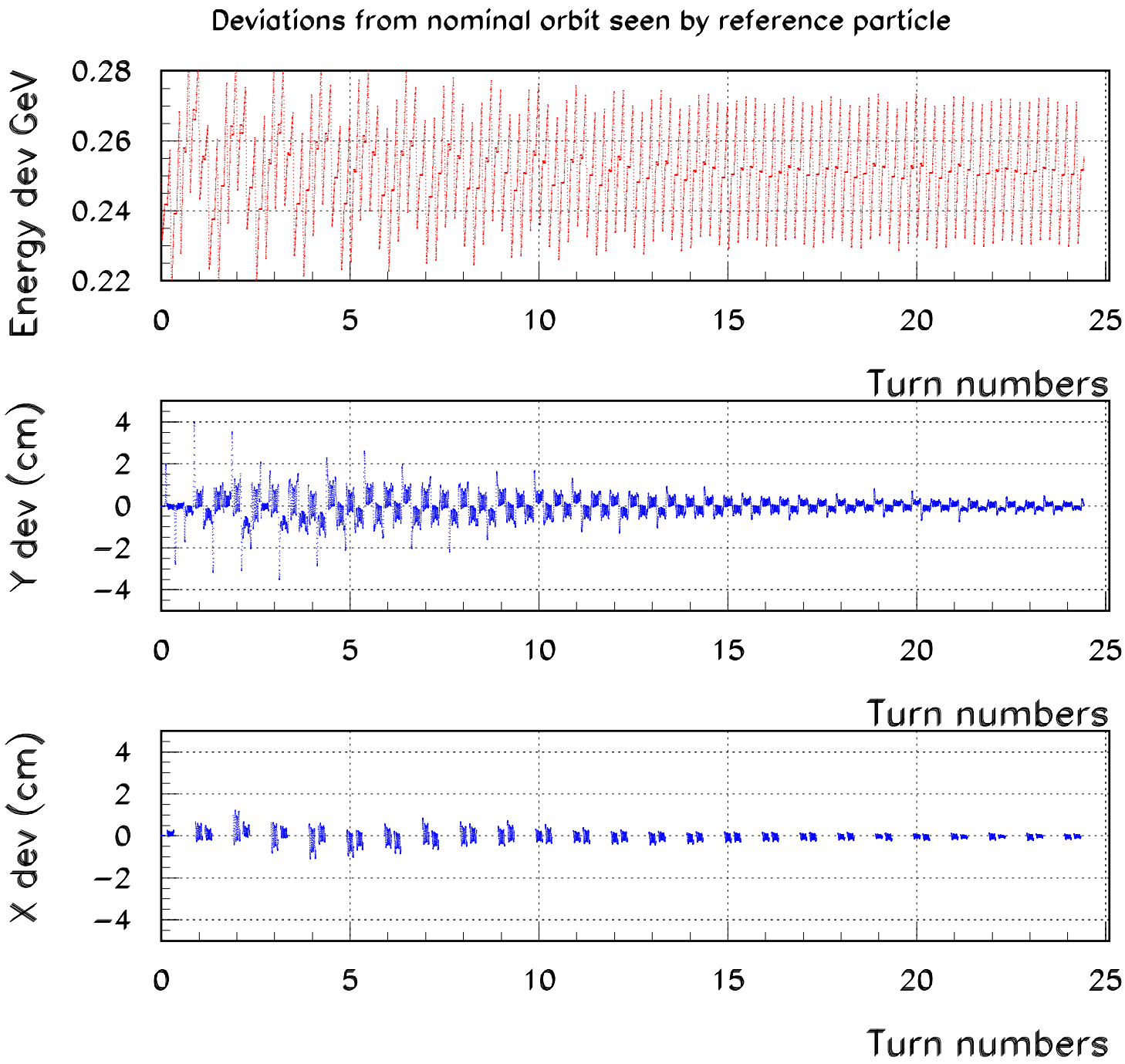

Figure 2: Cooling for particle when Z += 1σ.

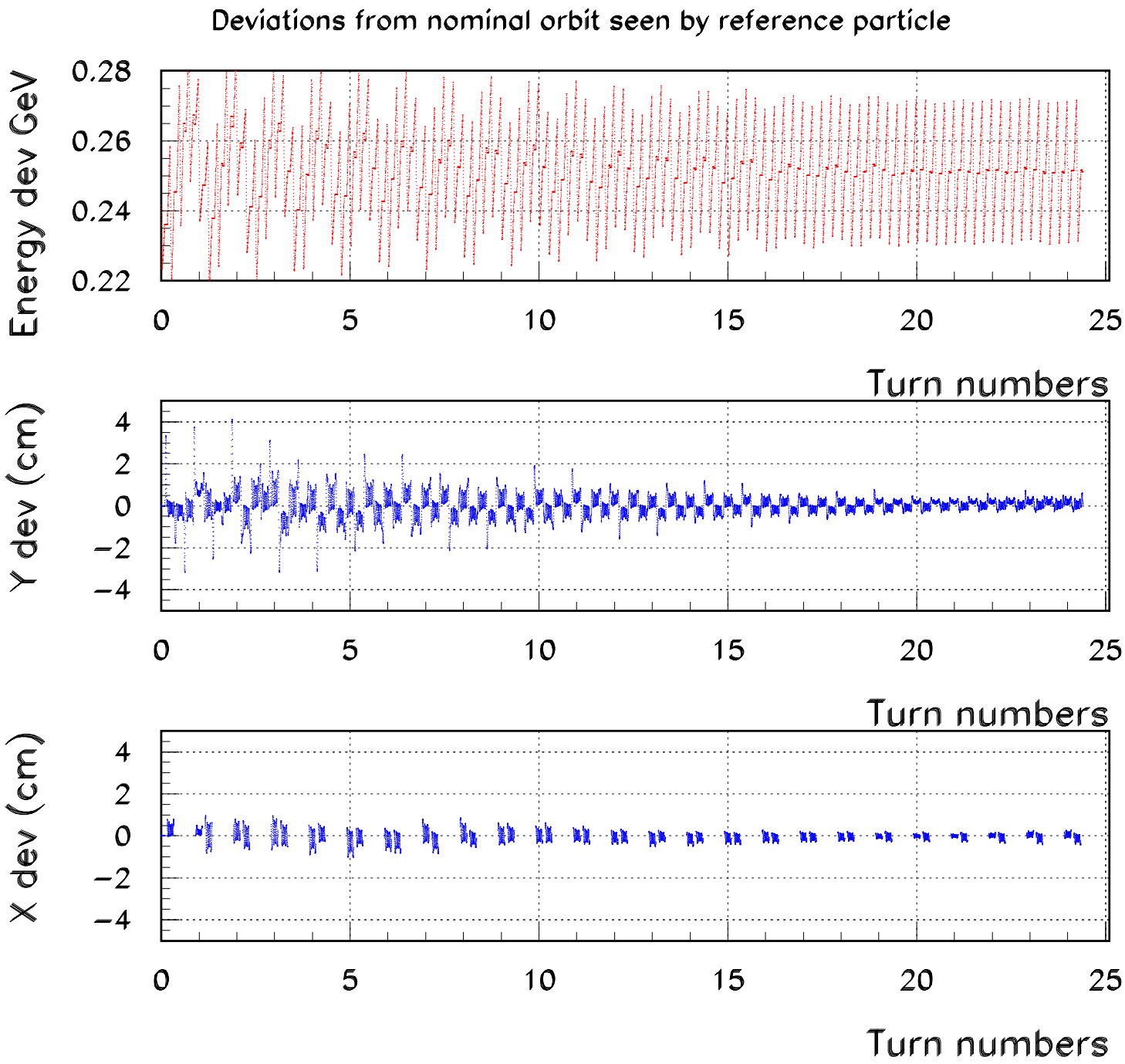

Figure 3: Cooling for particle when E += 1σ and Z += 1σ.

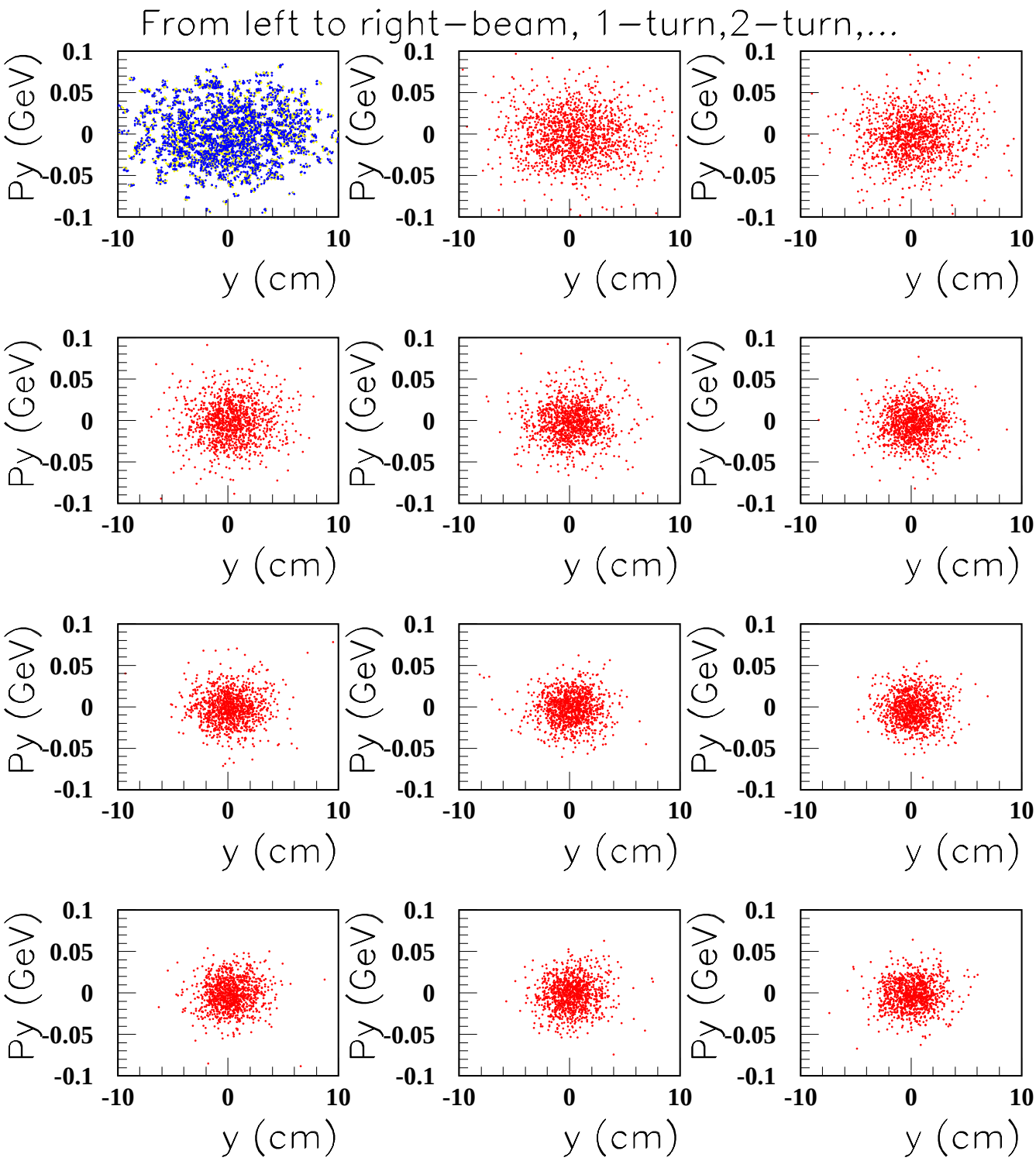

Figure 4: $Y - P_Y$ distribution turn by turn.

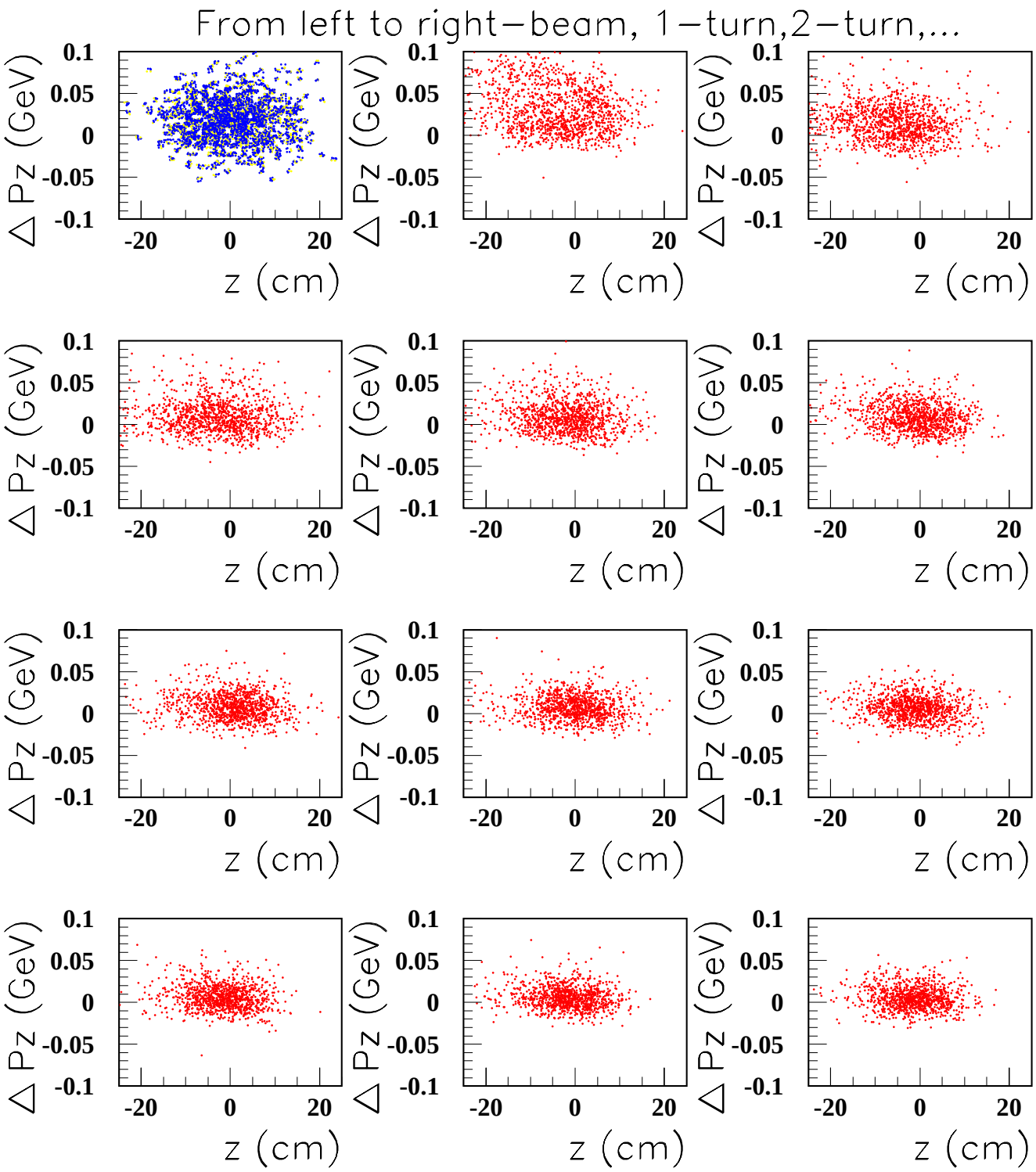

Figure 5: $Z - P_Z$ distribution turn by turn.

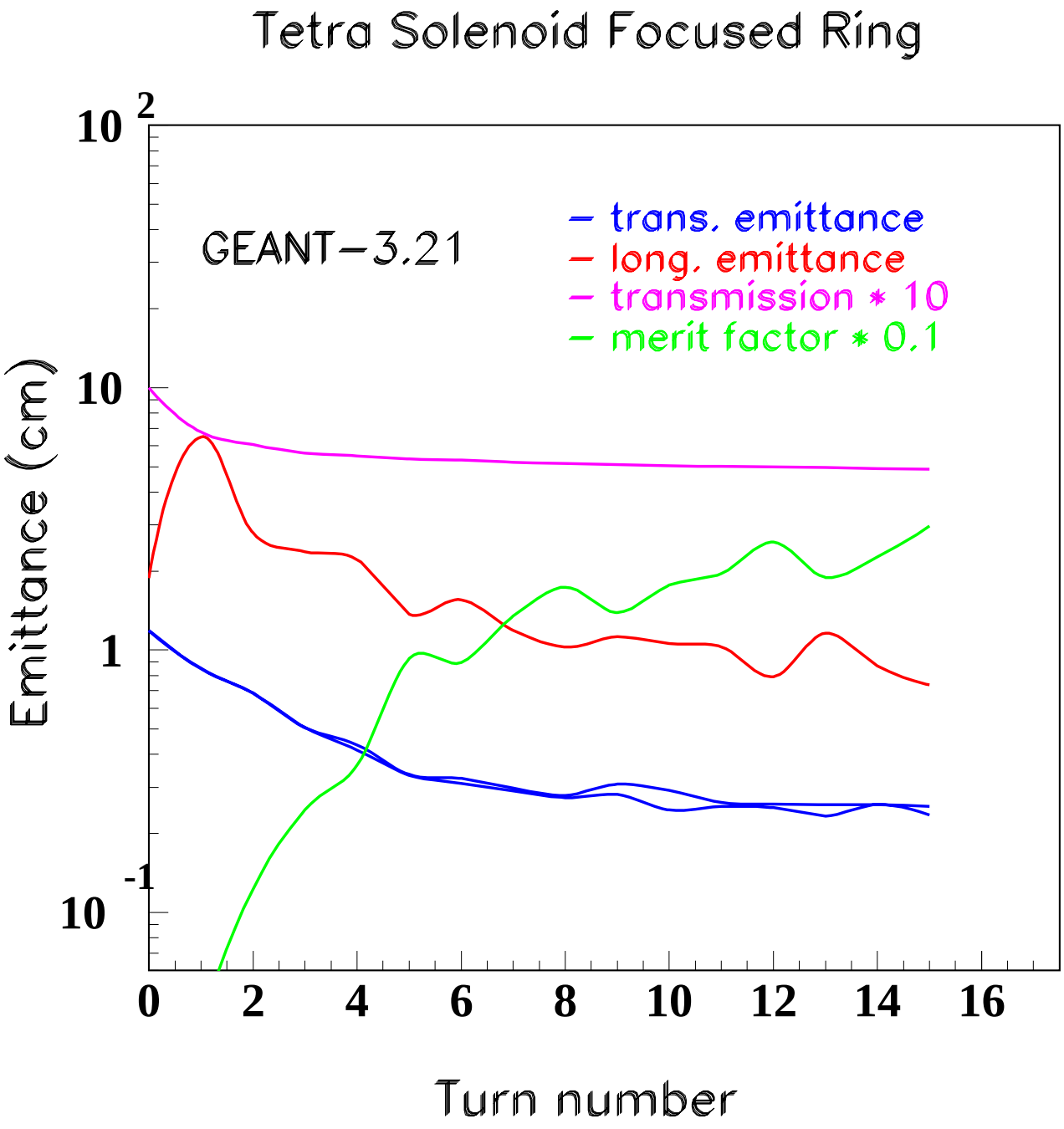

Figure 6: Emittances, transmission and merit factor.

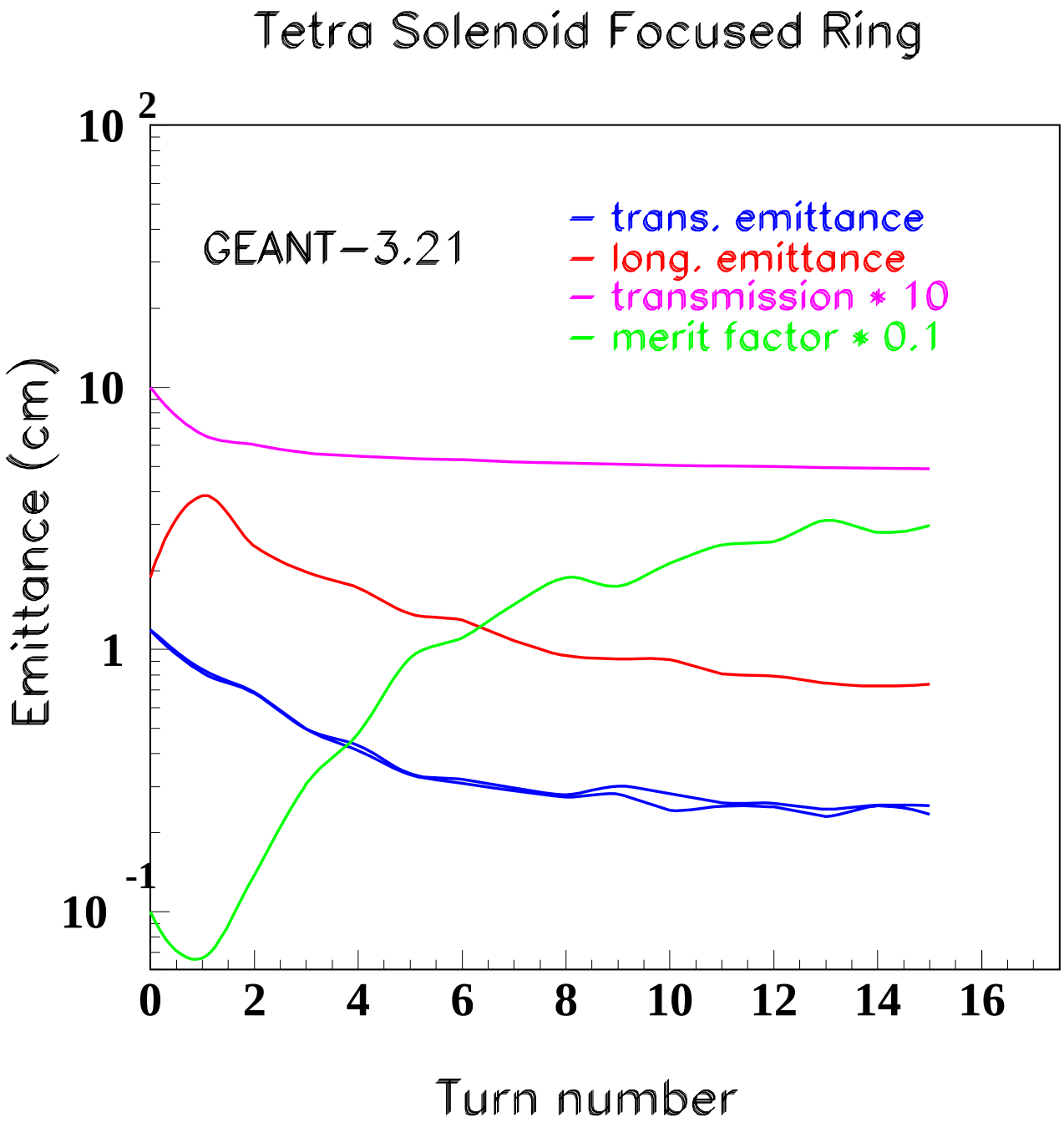

Figure 7: Emittances, transmission and merit factor $Z = Z_0 \pm 80\,cm$.