Latest simulation results from MAUS

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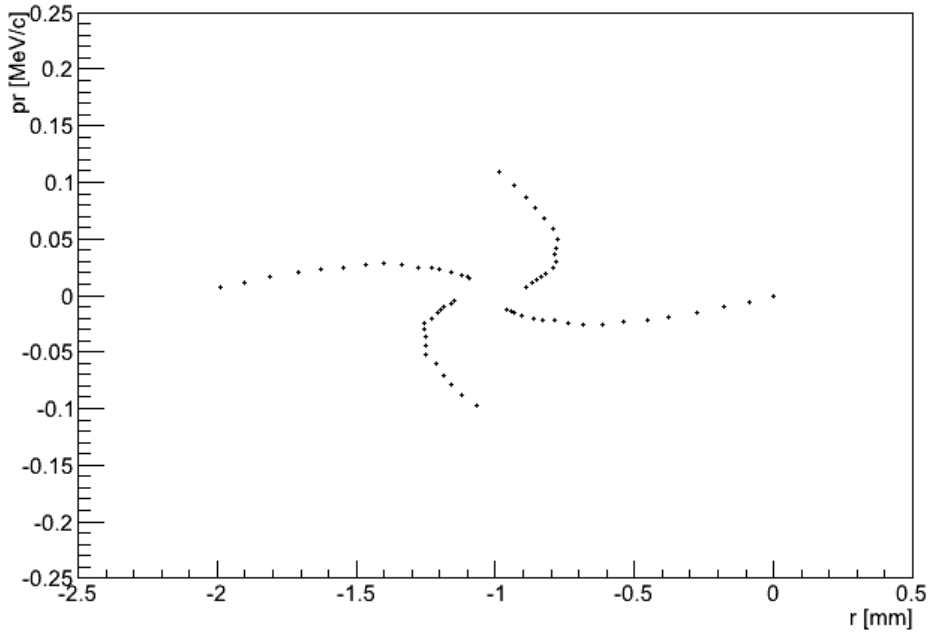
Simulation Update

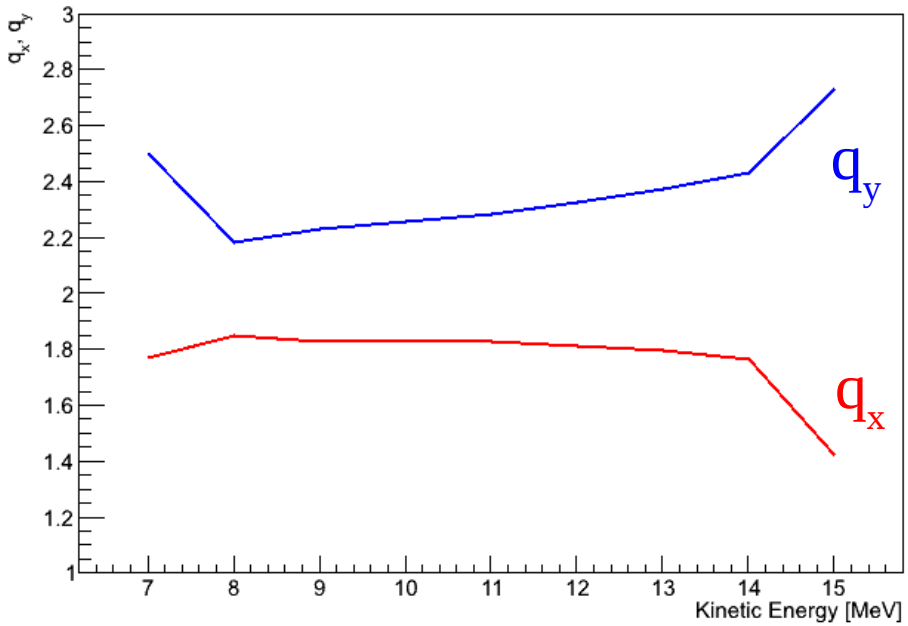
- A few updates since last time
  - Tune (in)dependence on momentum
  - Tracking accuracy
- More on cooling
  - Cooling with 8 micron input emittance

Tracking Accuracy



- Tracking gives some emittance growth over 66 turns
  - 2 mm in ~ 1 km of tracking
  - G4StepMax parameter is 100 mm
    - But note that G4 steps in time domain, so not sure what that really means

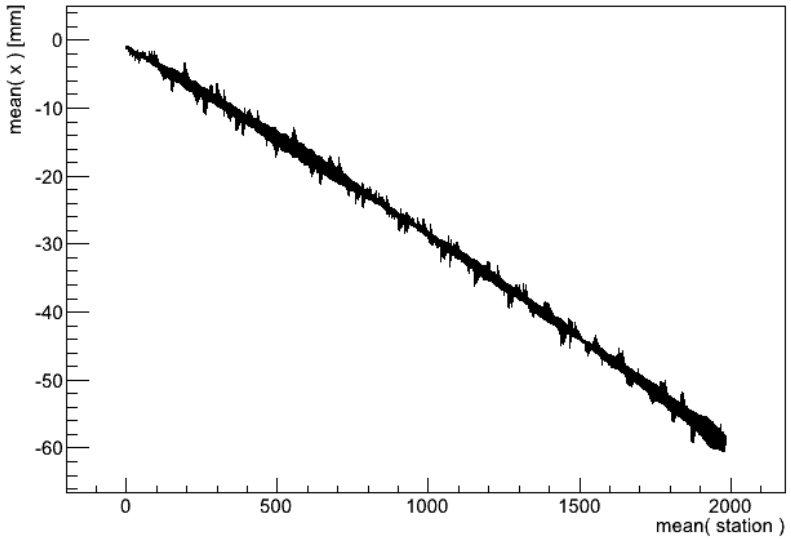
Ring tune

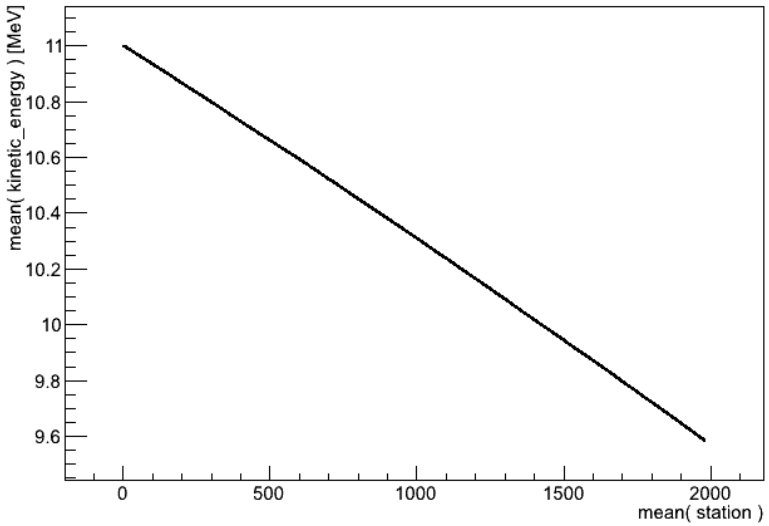


- Calculate single cell transfer matrix from numerical differentiation of tracking
- Single cell phase advance ϕ from matrix trace/2
- Ring tune extracted as ϕ*8/2π

Closed Orbit Migration

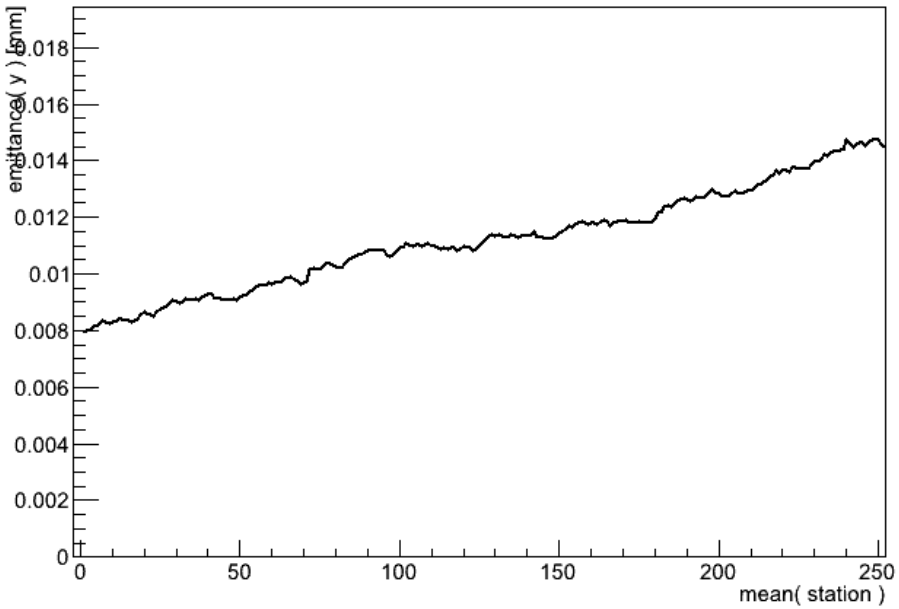
- Beam Position moves adiabatically across the aperture



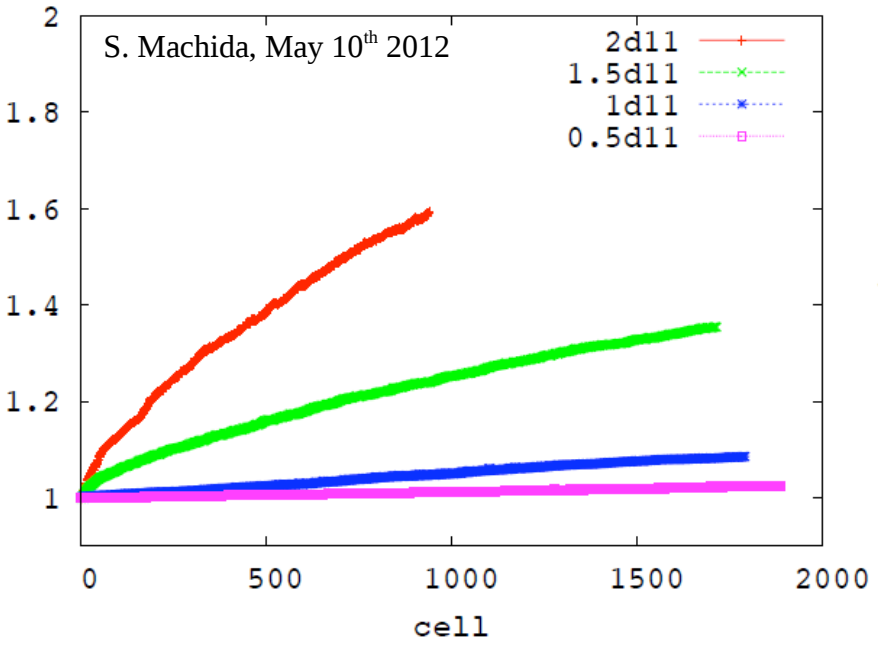


Emittance growth from foil

- Geometric emittance

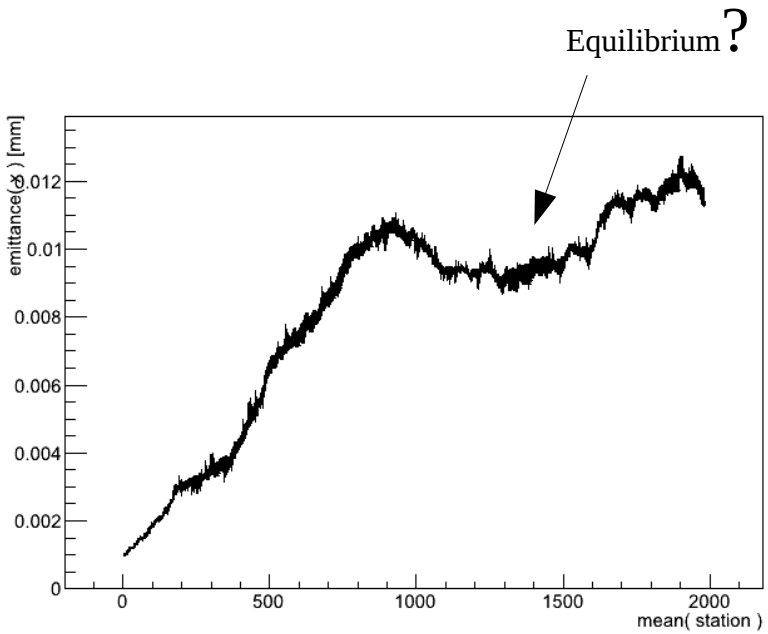


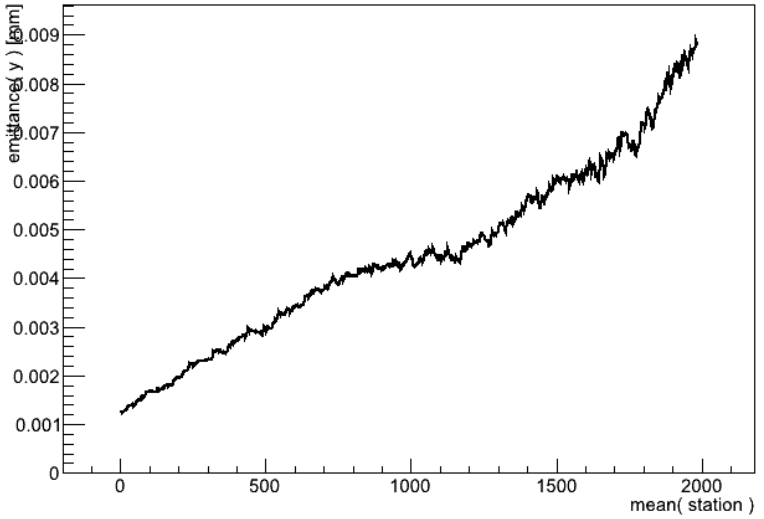
0 cell 2000



Search for Aperture/Eqm Emittance

- Looking for the aperture … 2000 turns and still not found it...
  - Rerunning with 8000 turns





To Do

- Check absorber thickness
- Add apertures
- More statistics, more turns
- Start looking at injection modelling
- Add RF
- Investigate diagnostics
- Space charge effects of absorber - probably want to use another code