Lithium lens Front-end idea

- A simple model for simulation

  Use Lithium lens as

  a target,

  pion/muon capture channel,

  phase rotation section,

  transverse/longitudinal cooling

- Assumption:

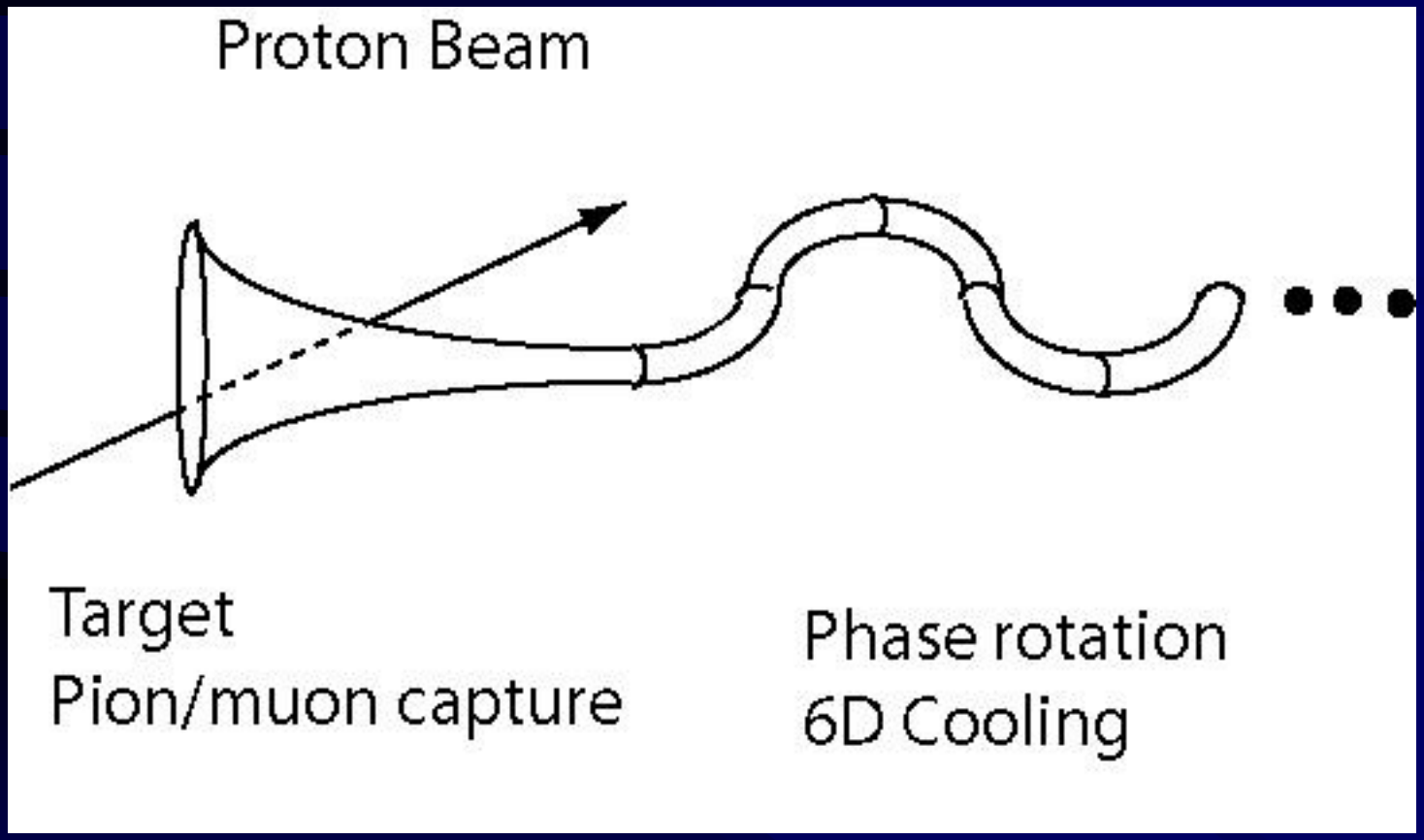
  Cost is not the issue.

  1 mm gap RF acceleration , 1 GHz, 20 deg phase

  (1 MeV/C/cm -dPz/dz at 250 MeV/c)

  most un-realistic model

Schematic Diagram



Target, π/μ Capture

- more pions may be captured
  Simulation need hadronic interaction in the Lithium (Geant?) Gain Factor ~ 2 ?
- Liquid Lithium is circulated to remove heat
- only for single signed charged muons
- What can be the optimum muon momentum?
- Use RF acceleration in the channel

Phase Rotation, 6D Cooling

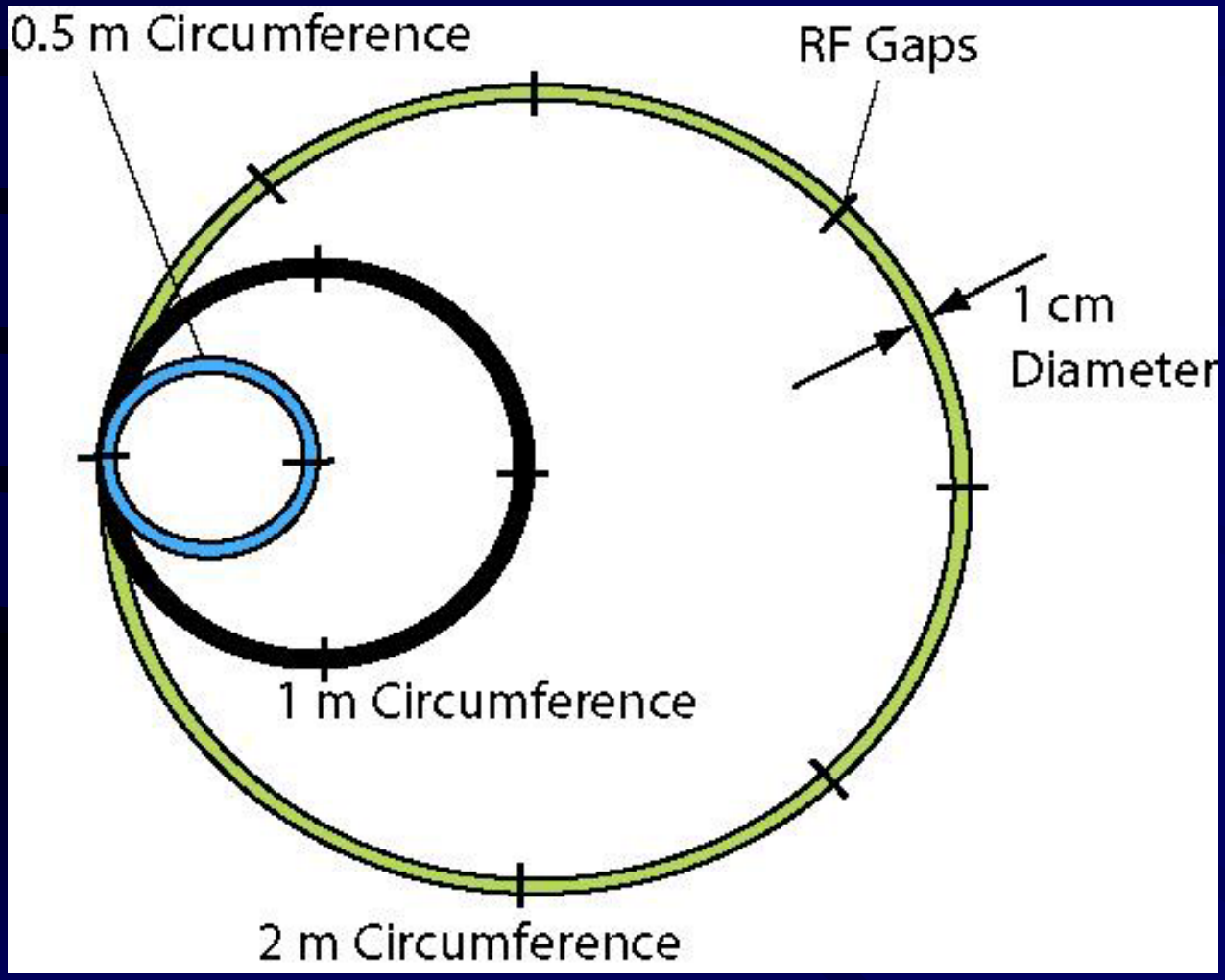
- Use 180 degree curved Lithium lens

  A single path channel
- Steps to go:

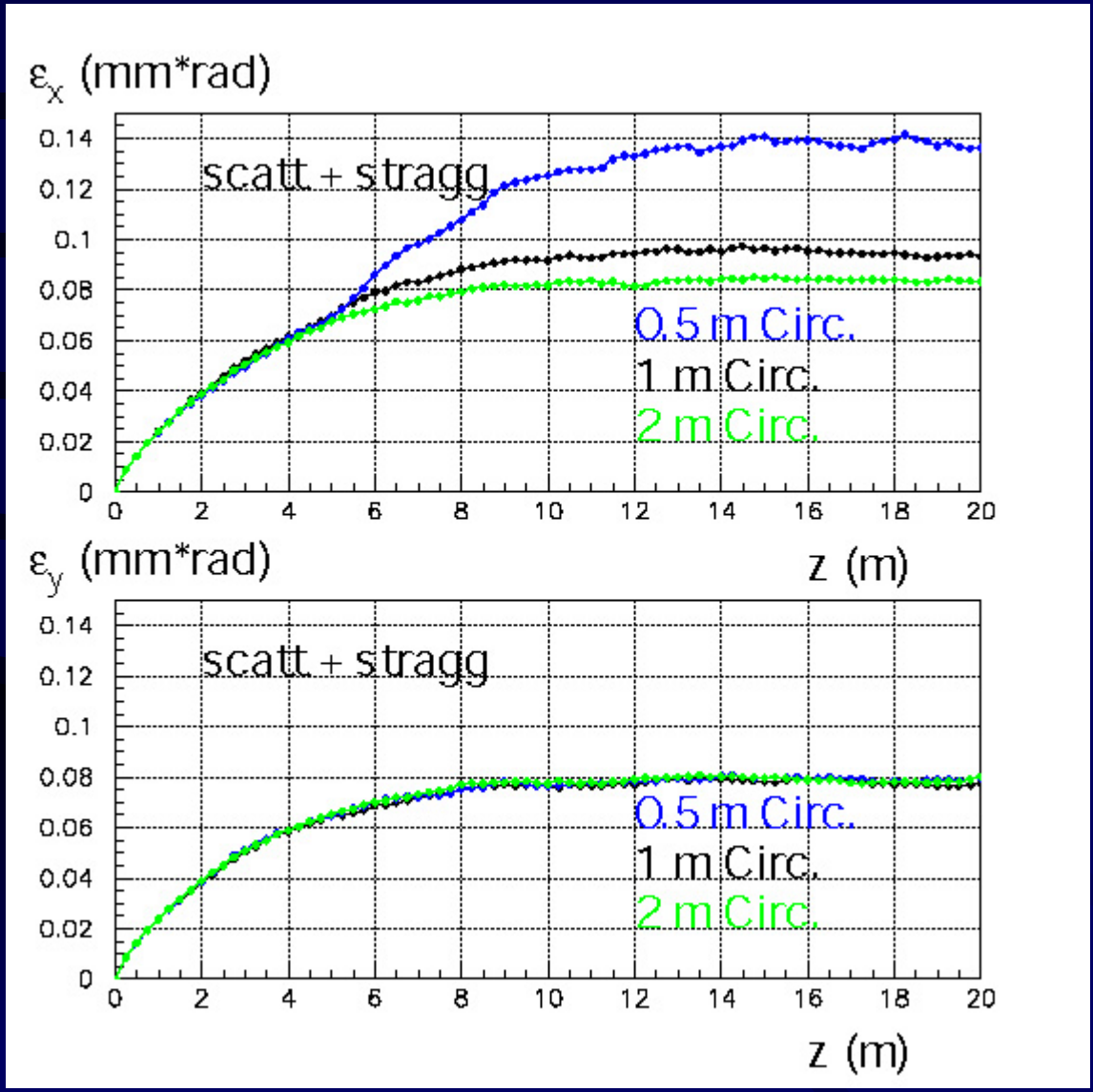
  Understand the 6D cooling in a curved Lithium RING.

  Convert to a single path channel.

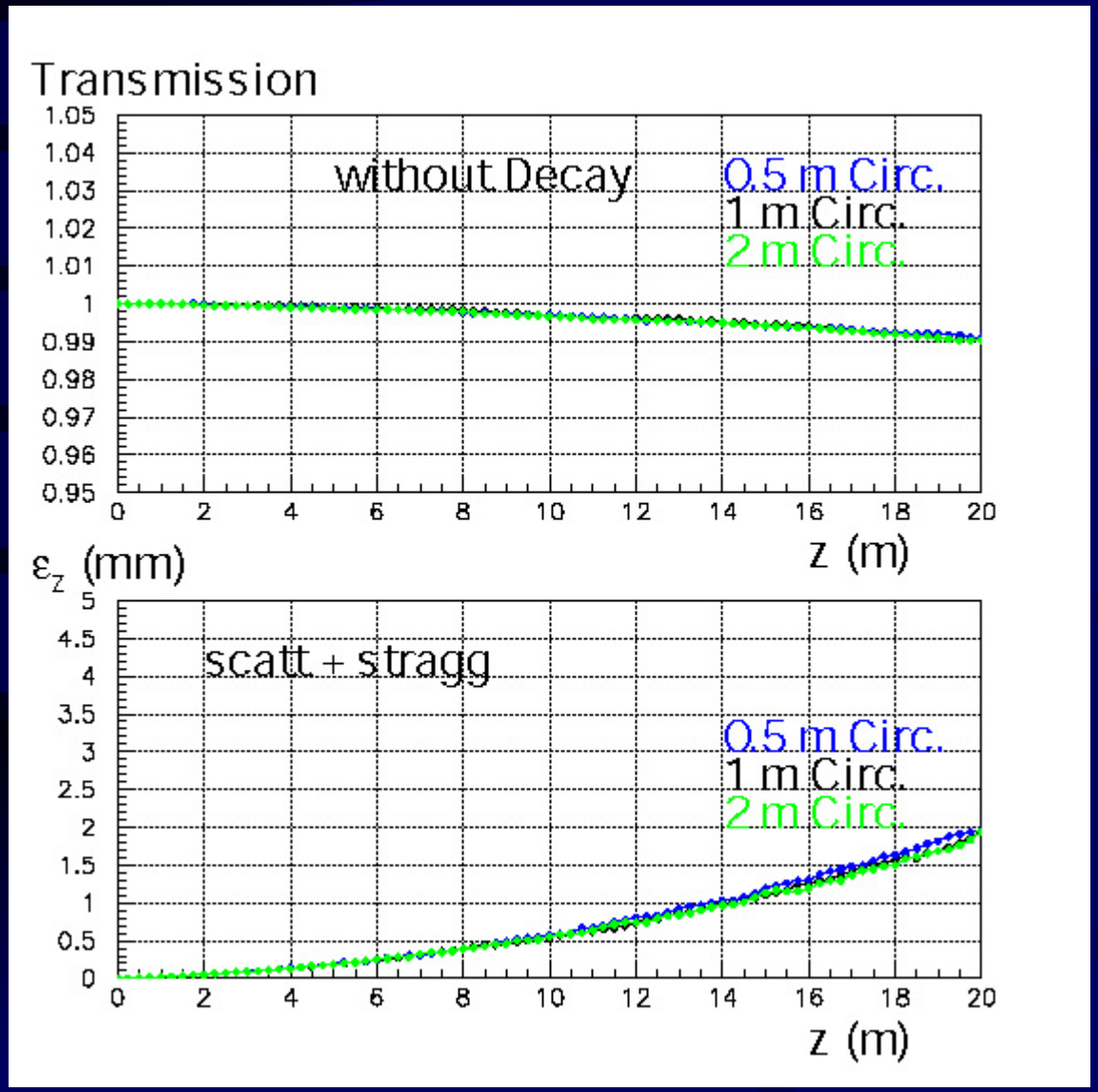
Curved Lithium lens Ring



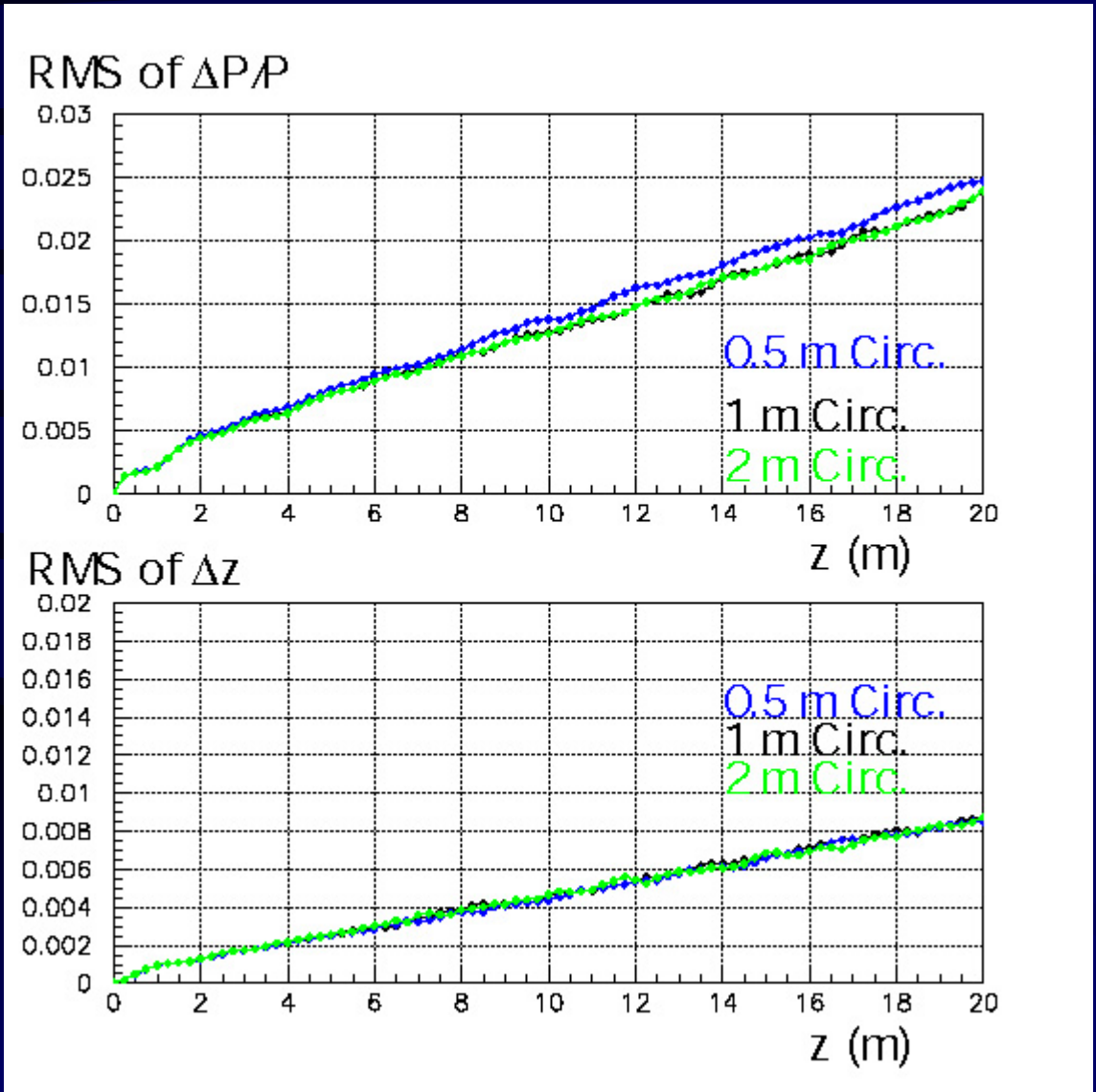
Transverse Emittance



Longitudinal Emittance



Longitudinal Emittance (cont.)



Summary

- All Lithium lens Front-end model is presented.
- Need to study on 6D cooling in Lithium lens RING, then
- Simulate single path Front-end channel.