IR/Roman Pots Simulation Update

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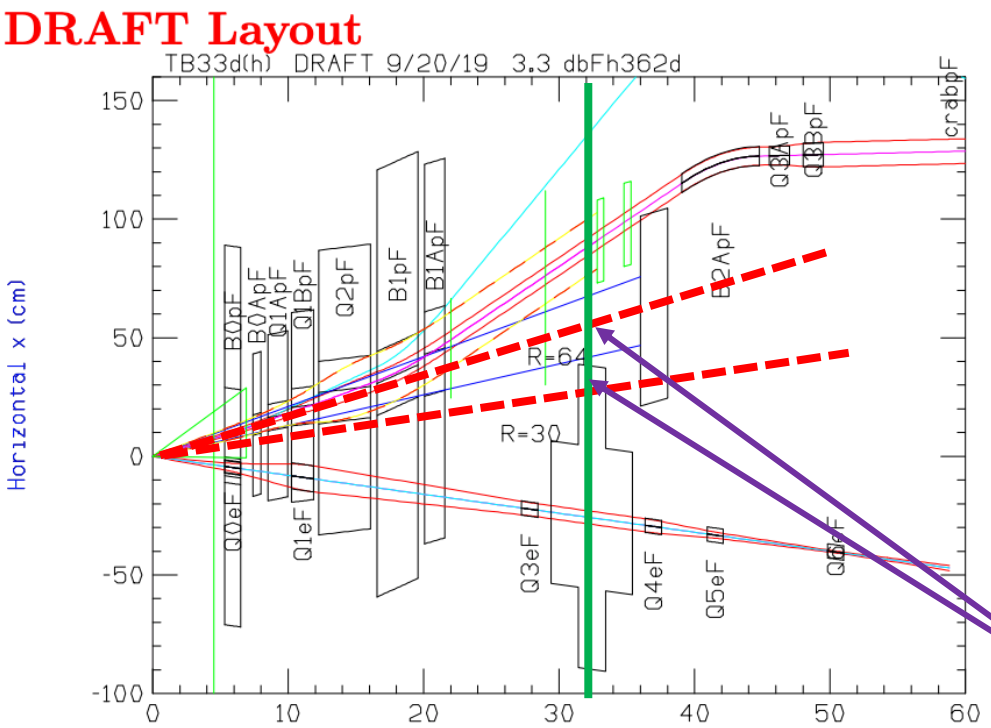
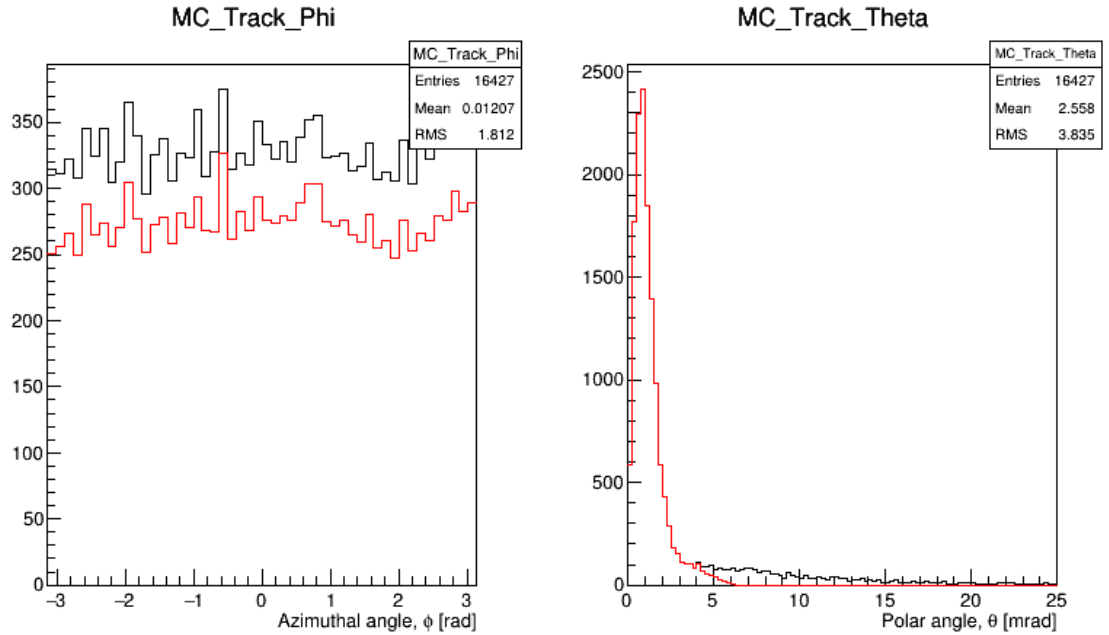
11/1/2019

Neutron cone/crab cavity

- Neutron cone in eA extends up to 6 mrad outside magnet lattice.
- This means we need clearance in the drift space for that cone to avoid excess secondary scattering/particle production.
  - The effects of secondary production from the magnets themselves is being studied.

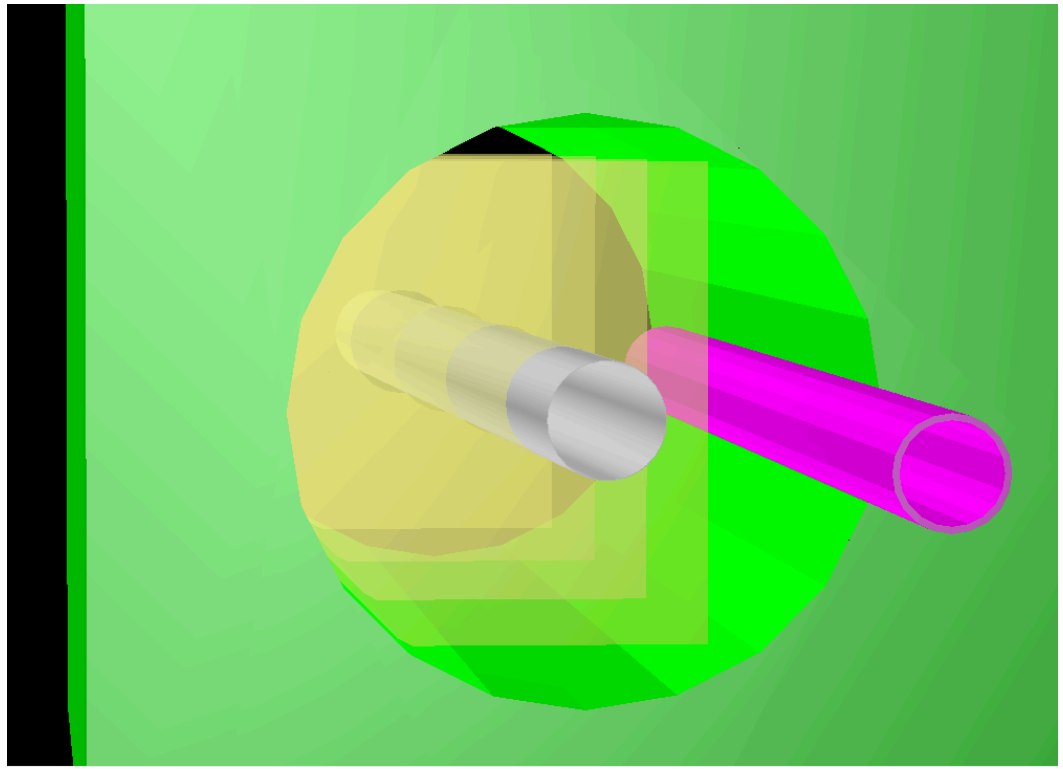


p magnet outlines, when shown, are of the yoke dimensions.



Assuming 17 mrad angle for the center of neutron cone, 6 mrad maximum extent for neutron cone, and Z ~ 32 meters…we need > 20 cm total clearance in x from core of neutron cone to edge.

New B0 design (sent to me by Holger)



- I have a place-holder beam pipe that captures full 5mrad cone needed for Roman Pots further downstream (inner radius ~ 6cm, arbitrary thickness for now).
- The IR information I currently have may need to be updated (see next slide) – the hadron beam does not fall where the new B0 design shows it.
- The smaller bore will restrict the large angle acceptance for the 41 GeV hadron beam (the scattered protons go up to 25 mrad).
  - I have a 20 cm radius in my mad-x files, the new one is 15 cm.

Side by side comparison