

DarkLight@ARIEL

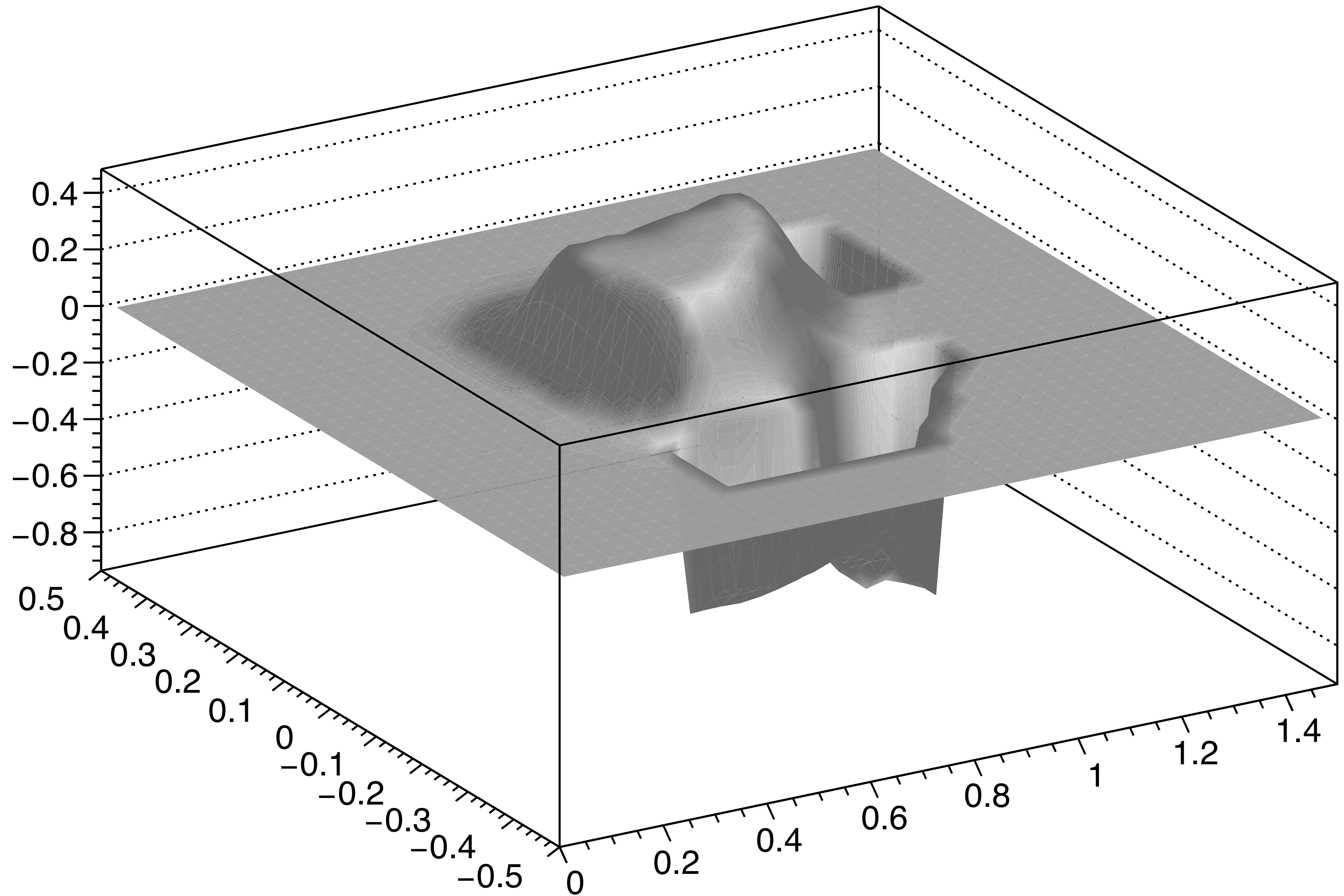
Particle Trajectories

Douglas Hasell, 20221122

Nominal Bz Field - Courtesy of Xiaqing

0.35 Tesla nominally

0.8 Tesla in iron

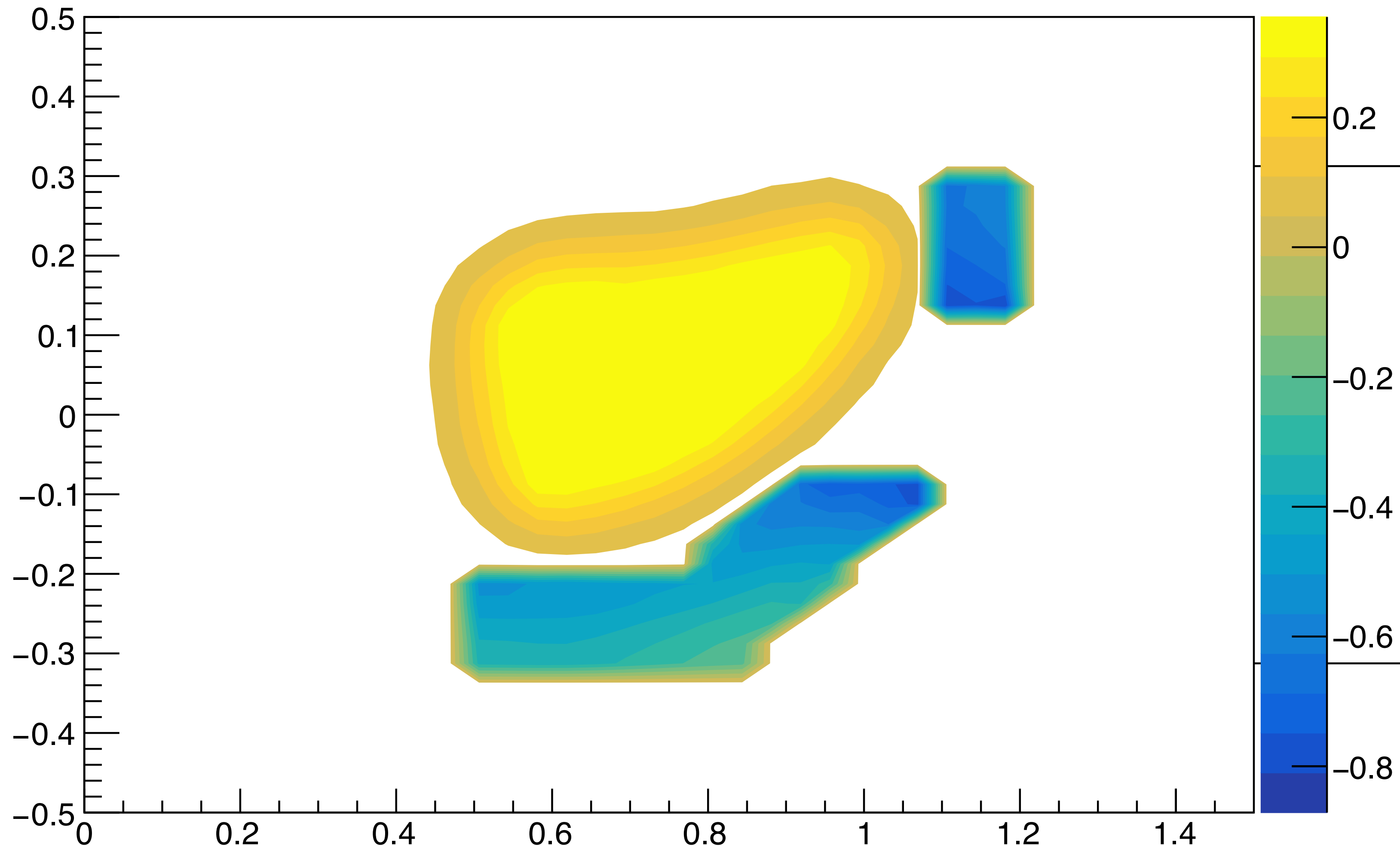


Nominal Bz Field - Courtesy of Xiaqing

Bz vs (x,y) [T]

0.35 Tesla nominally

0.8 Tesla in iron



Dipole Vacuum Chamber Exit to GEMs

~724 mm

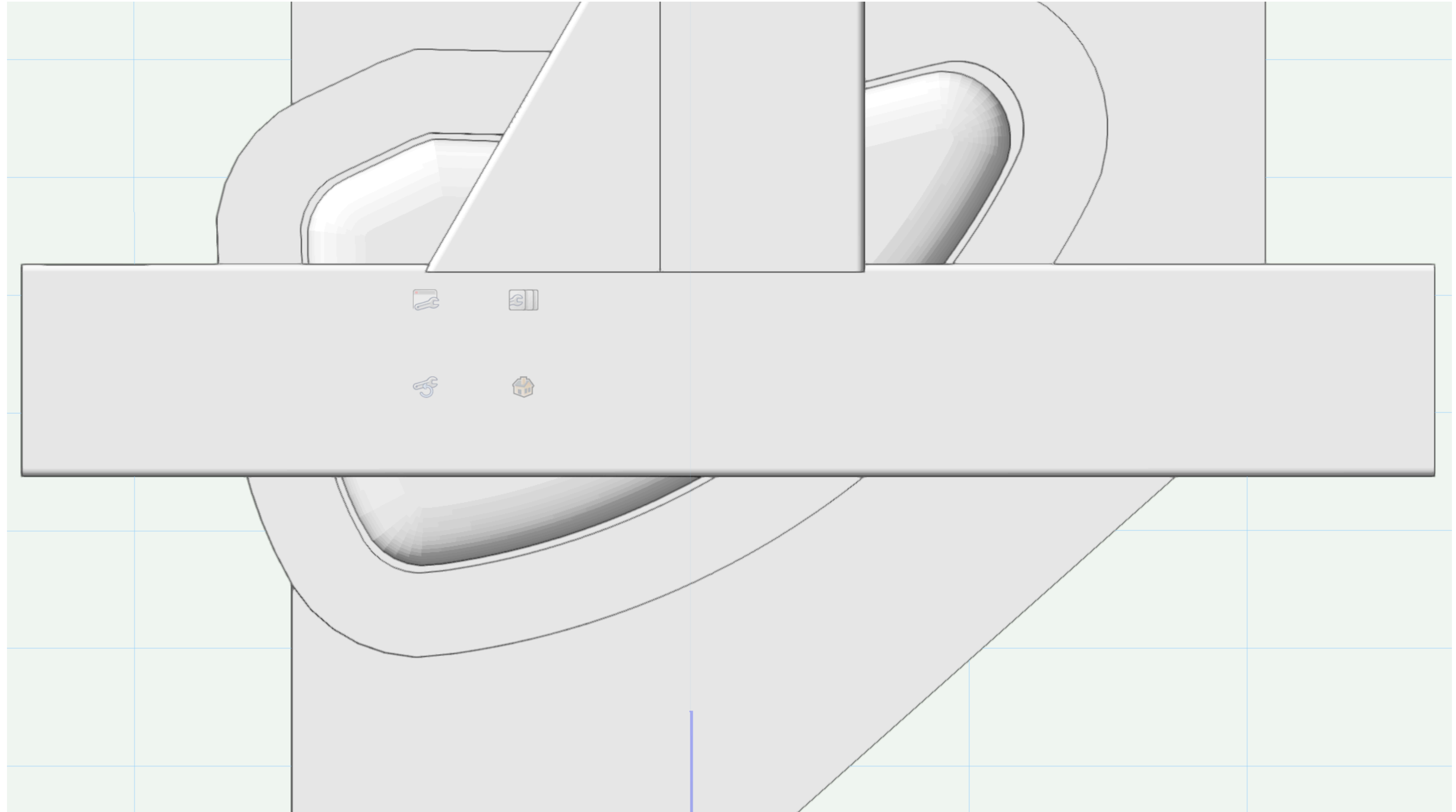
~910 mm

~310 mm

Stainless steel

3/16 inch material

Inside opening ~7 cm



31 MeV/c Beam, Nominal Field (Xiaqing)

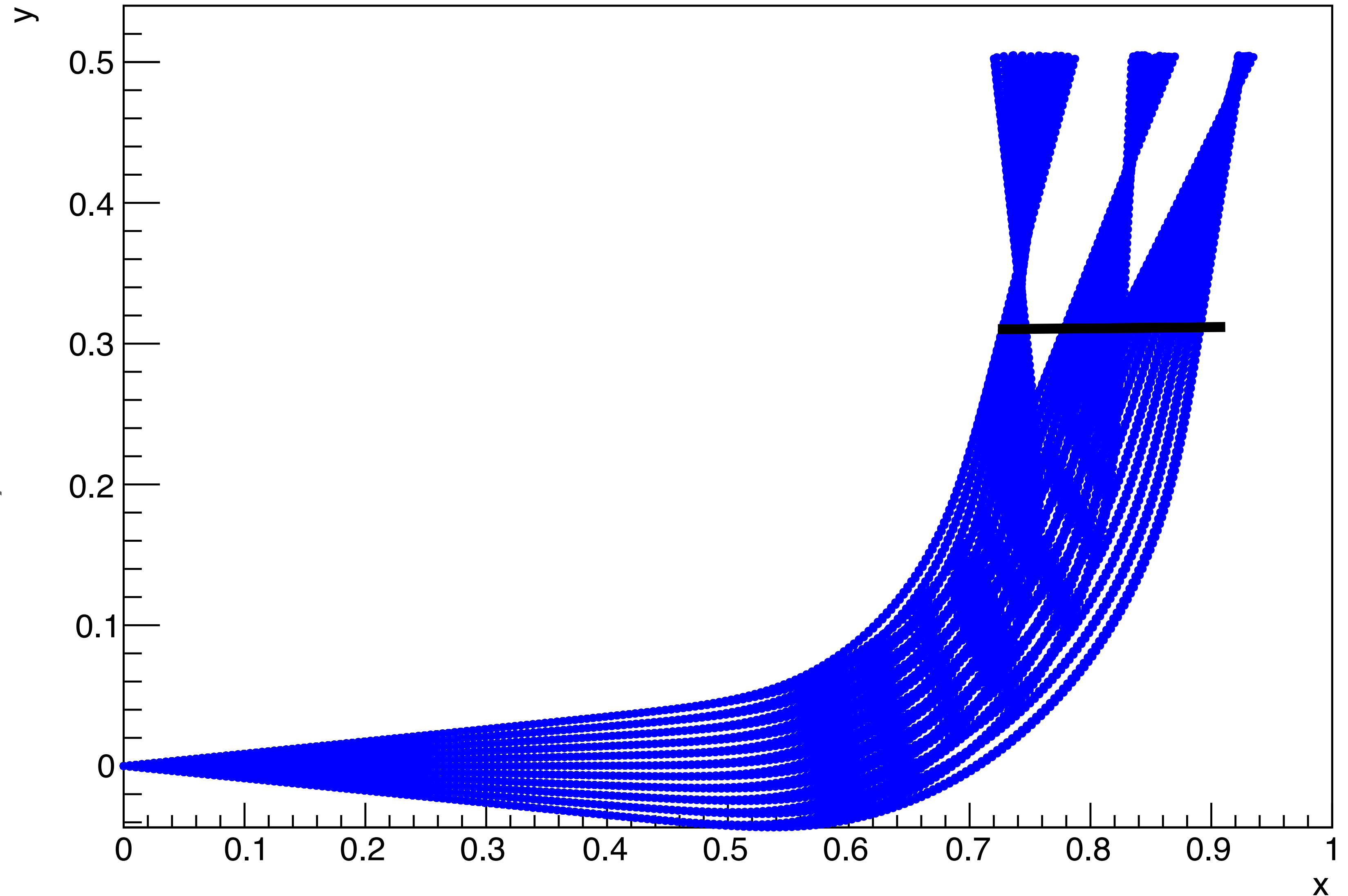
24.8, 31.0, and 37.2 MeV/c

+/- 2 degrees in-plane

+/- 5 degrees out-plane

Mostly fits through chamber

Could lower field slightly



31 MeV/c Beam, Nominal Field (Xiaqing)

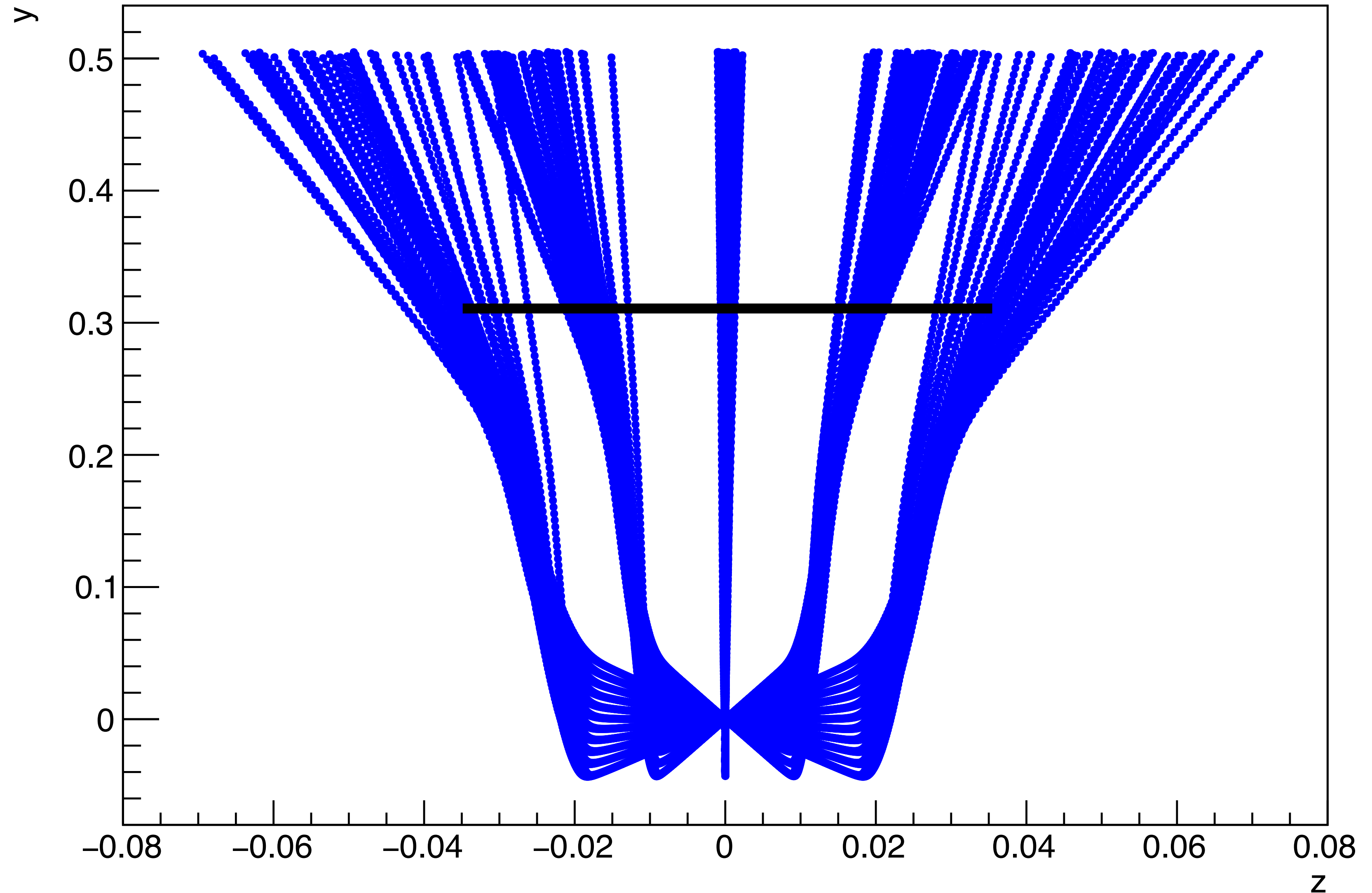
24.8, 31.0, and 37.2 MeV/c

+/- 2 degrees in-plane

+/- 5 degrees out-plane

+/- 2 doesn't fit

Need 9 cm wide opening



31 MeV/c Beam, 0.325 x Nominal Field

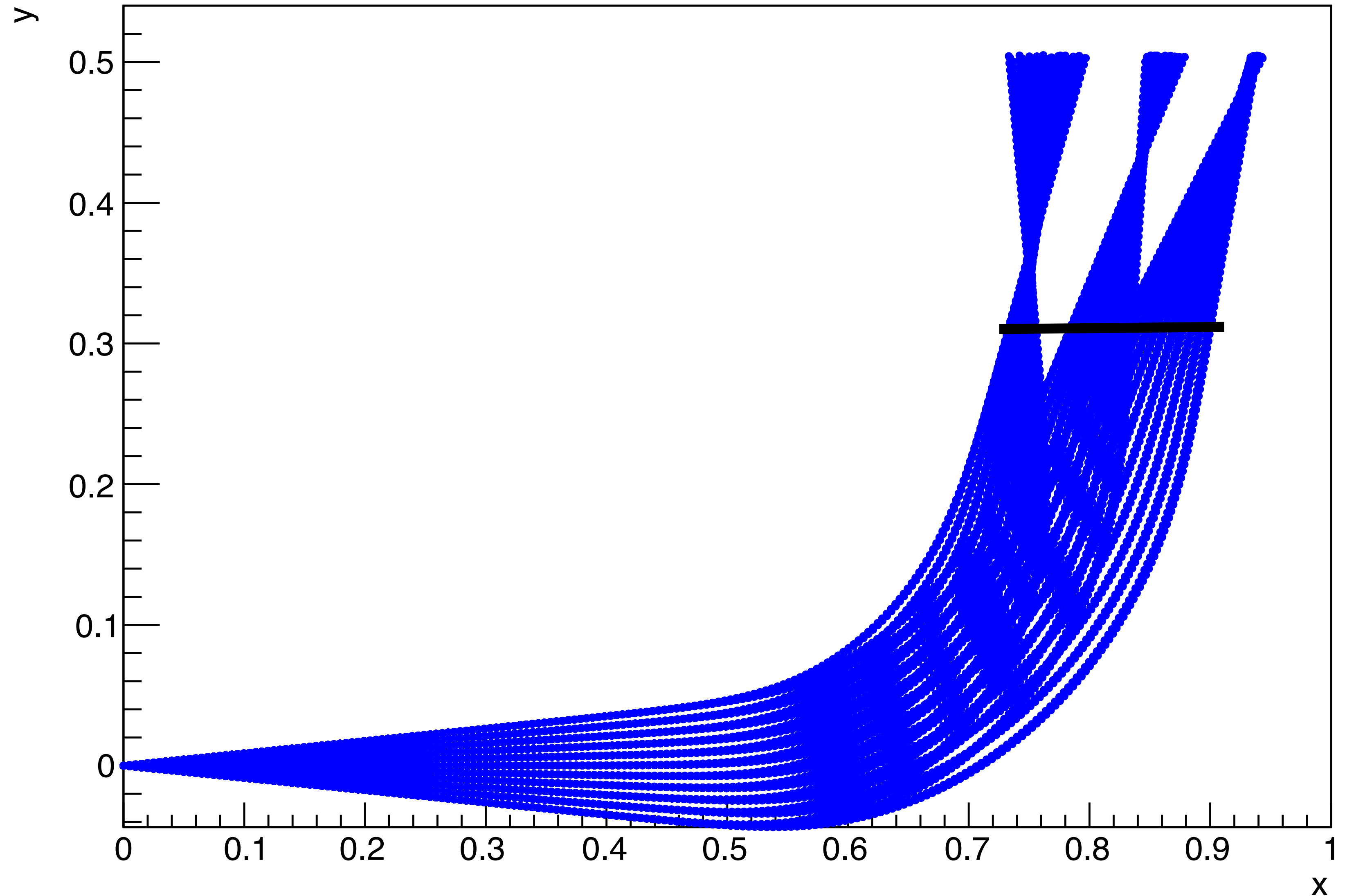
8.8, 11.0, and 13.3 MeV/c

+/- 2 degrees in-plane

+/- 5 degrees out-plane

Fits through chamber

In this view



31 MeV/c Beam, 0.325 x Nominal Field

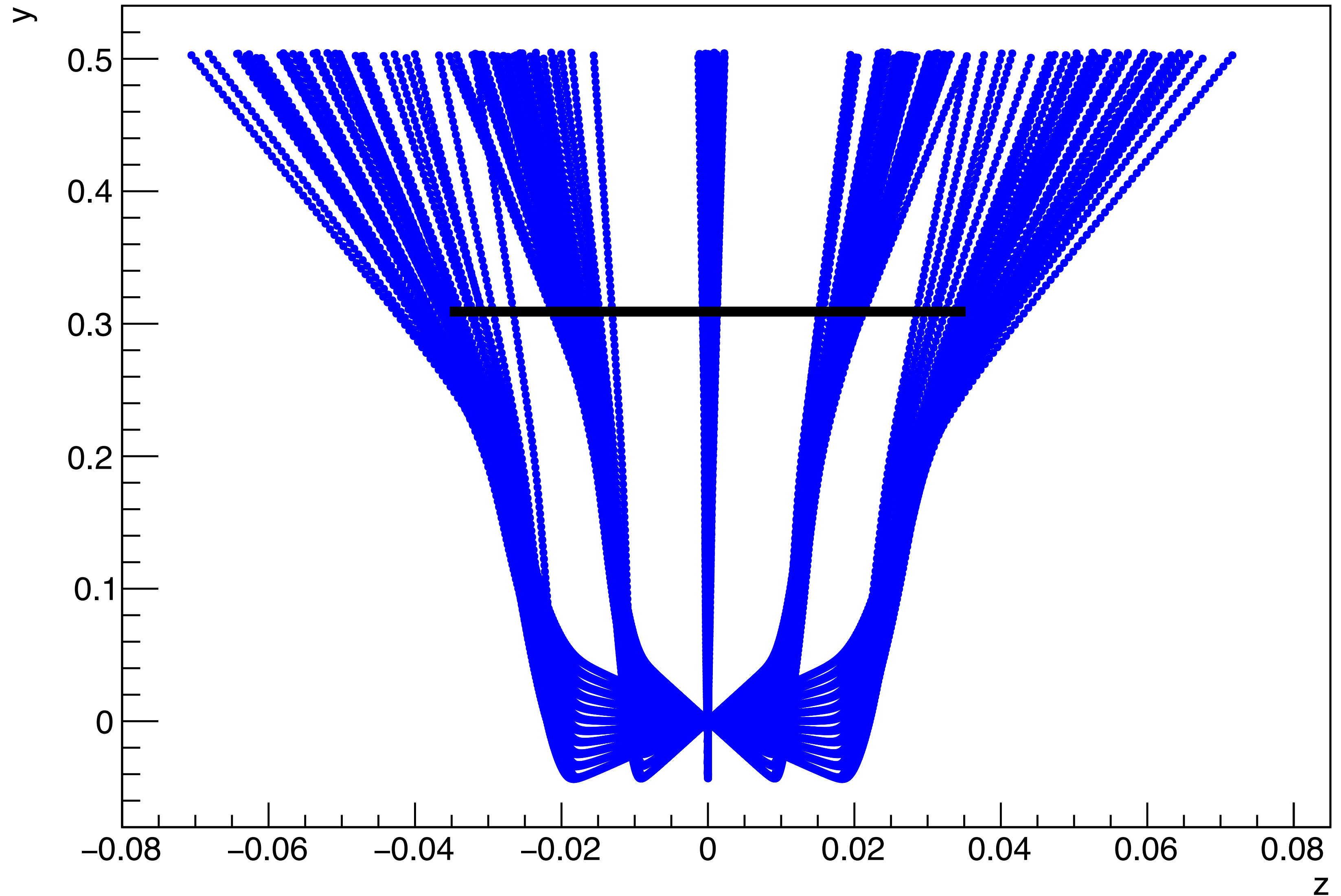
8.8, 11.0, and 13.2 MeV/c

+/- 2 degrees in-plane

+/- 5 degrees out-plane

+/- 2 doesn't fit

Need 9 cm wide opening



31 MeV/c Beam, 0.325 x Nominal Field

Elastic scattering 31 MeV/c

+/- 2 degrees in-plane

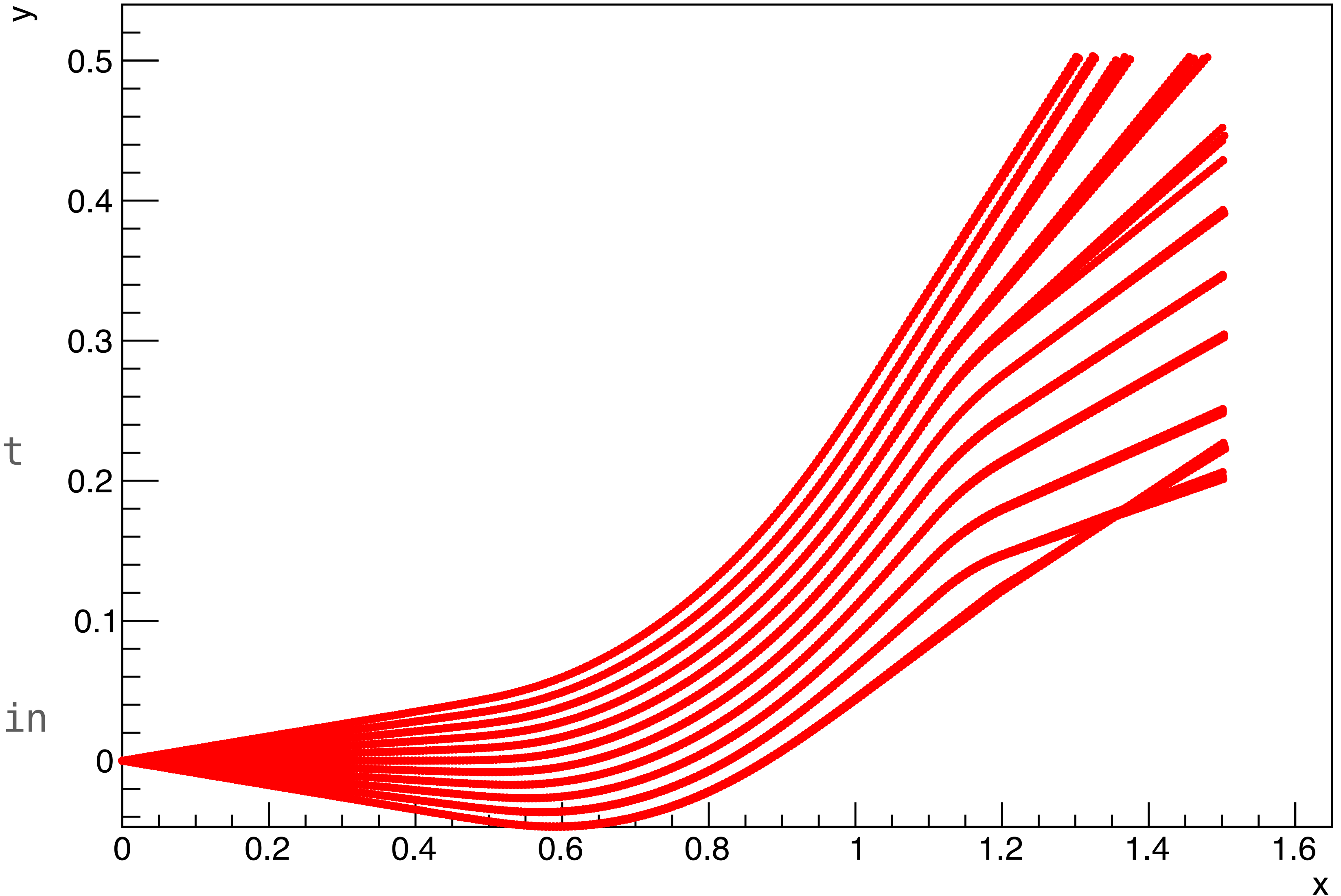
+/- 5 degrees out-plane

Doesn't make it out the exit

Forget about the exit

Terminate internally

Make back of yoke solid again



Dipole Vacuum Chamber No Elastic Exit

~724 mm

~910 mm

~310 mm

Elastics don't exit

Terminate chamber

Live with background

