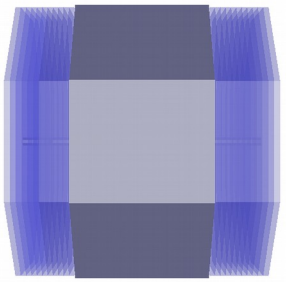
Updates on the SiDloi3 Geometry from SCIPP

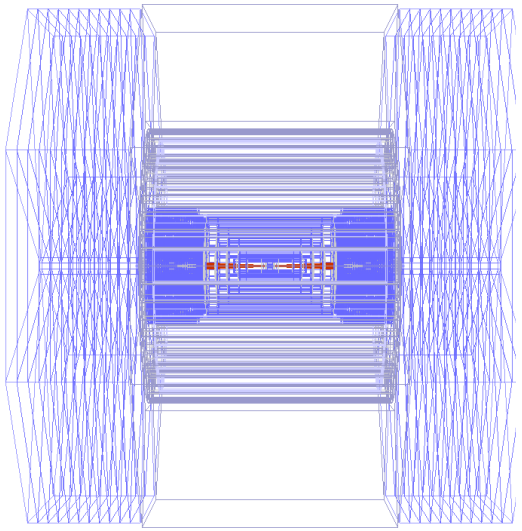
Geometry modifications made by
Christopher Milke

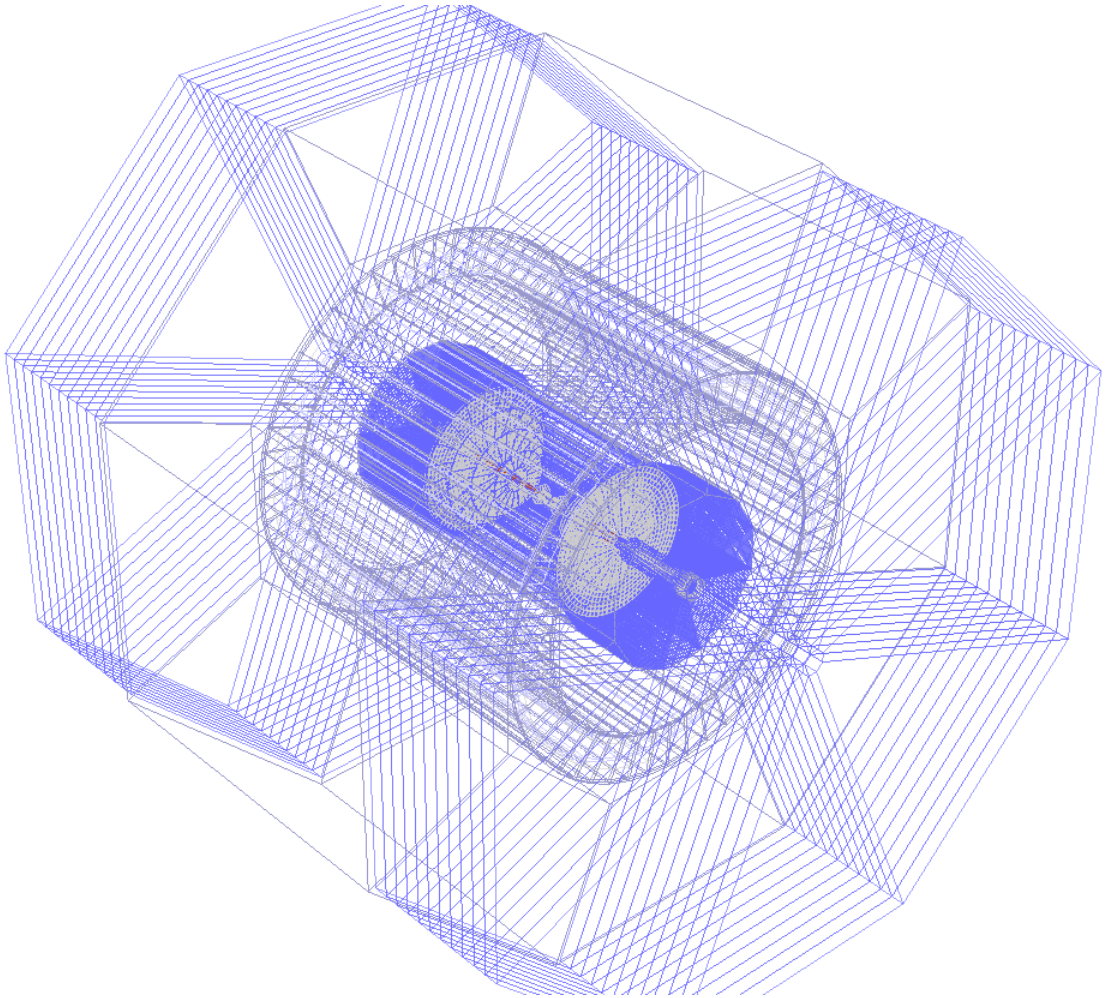
With supervisor
Professor Bruce Schumm

July 16, 2015

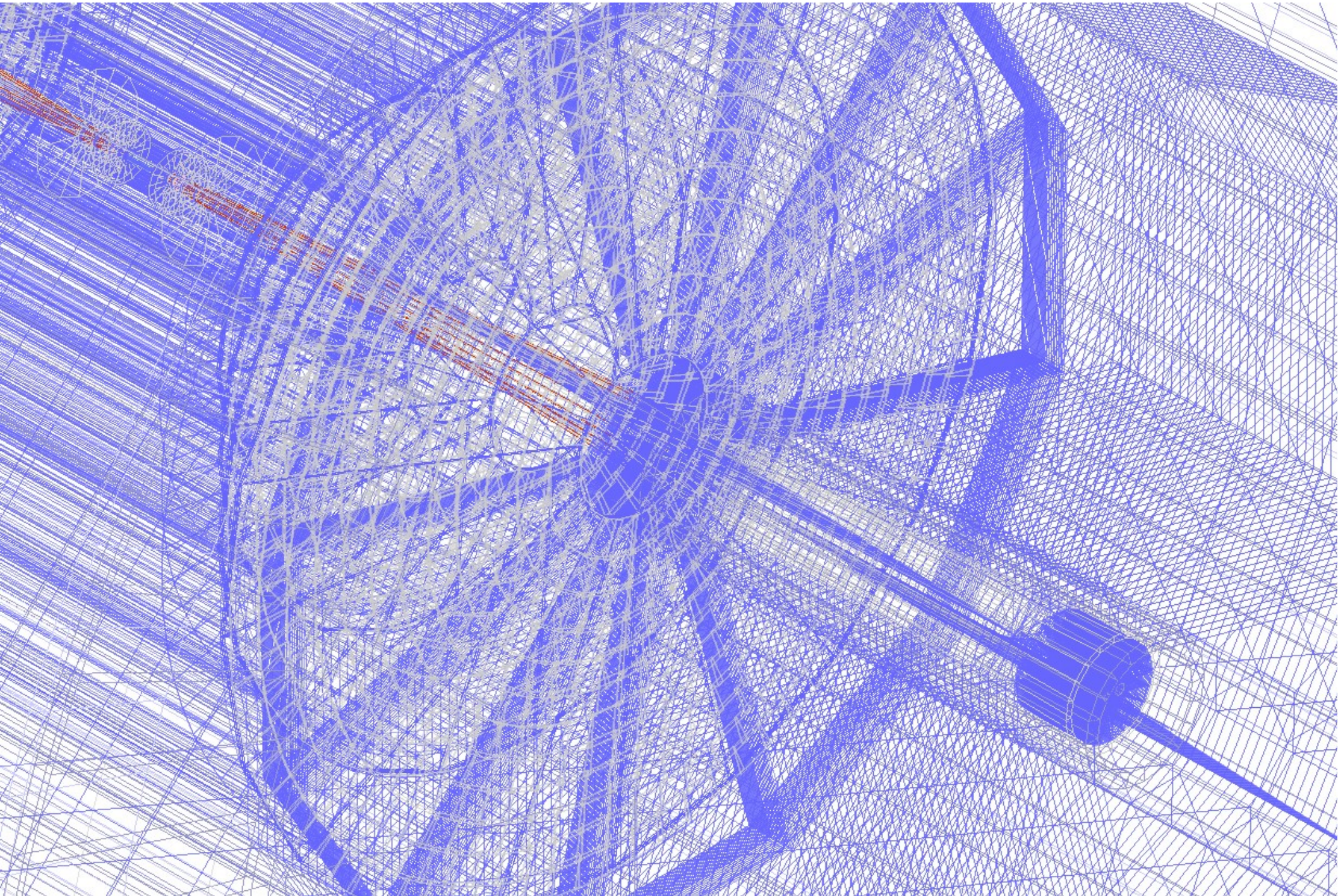
SiDloi3 Currently



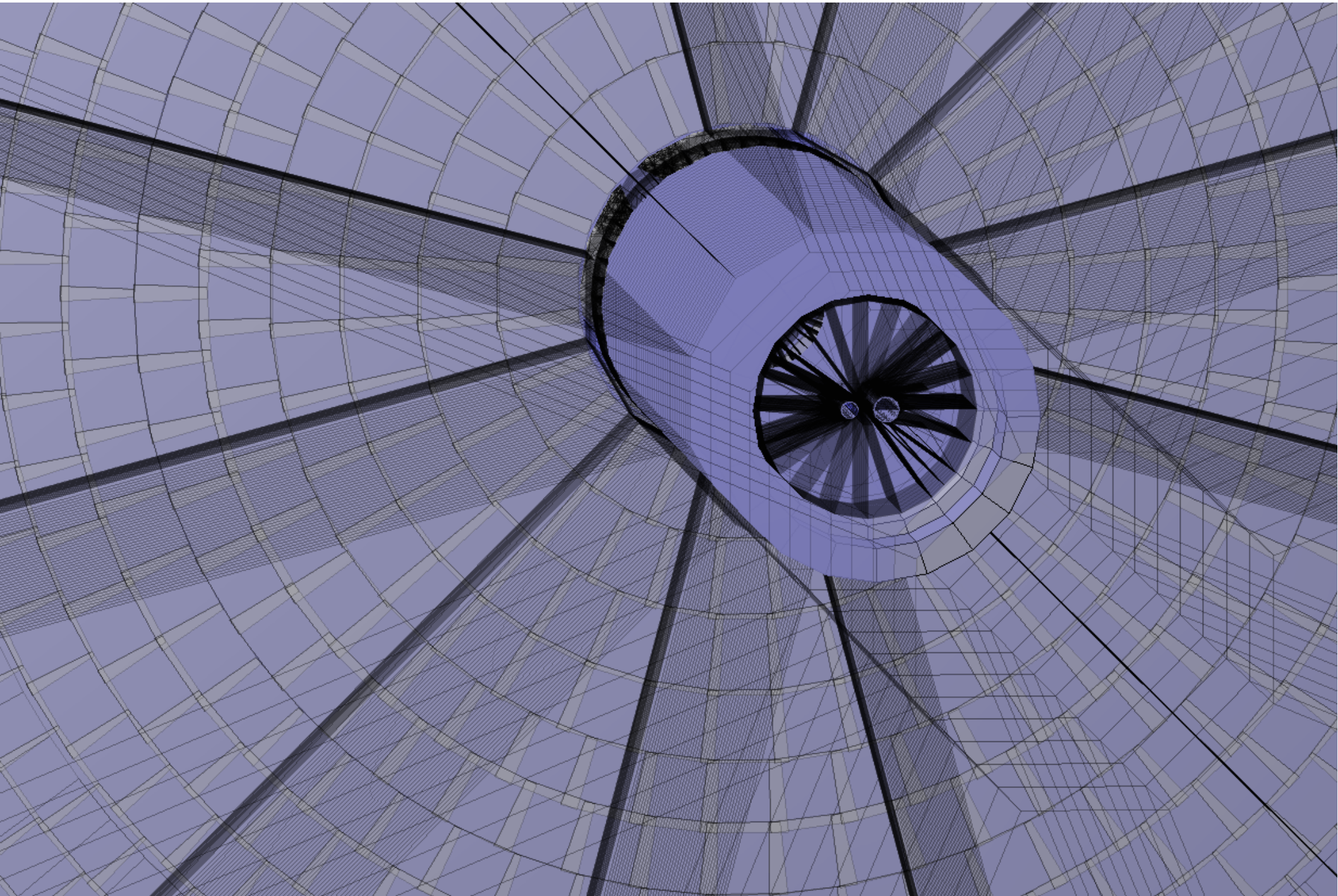




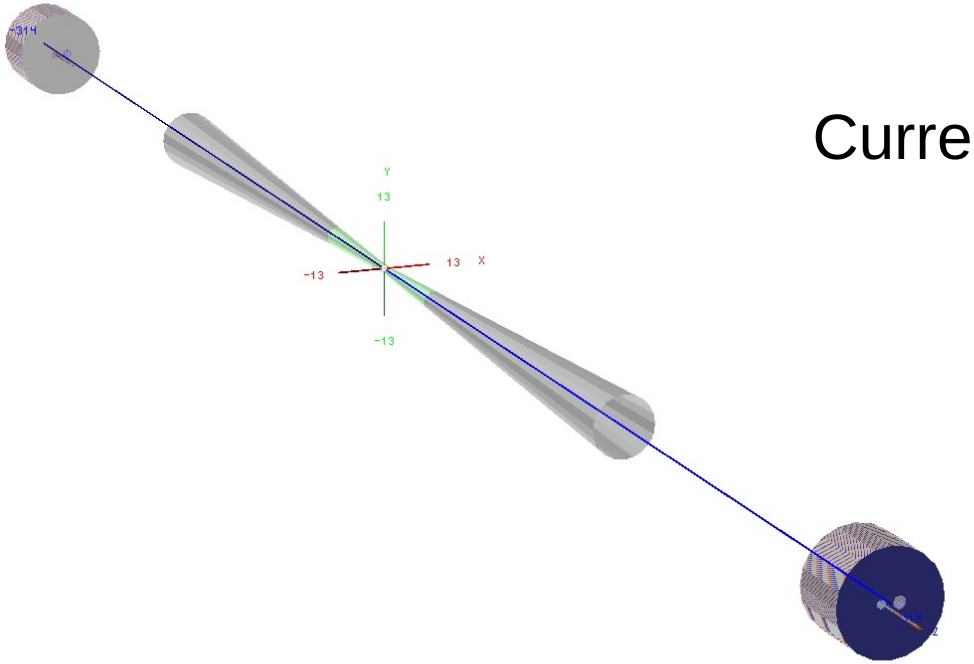
Current Interaction Region



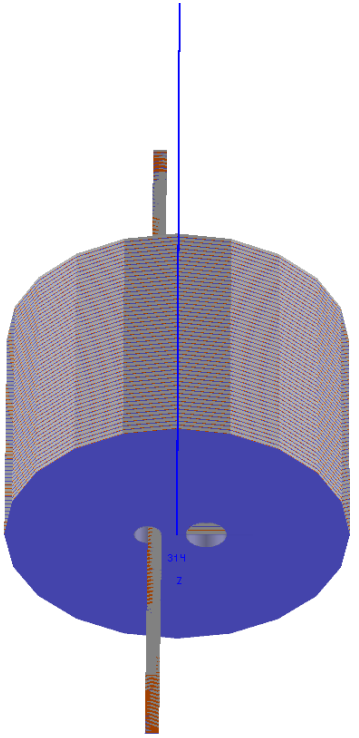
Current BeamCal Implementation



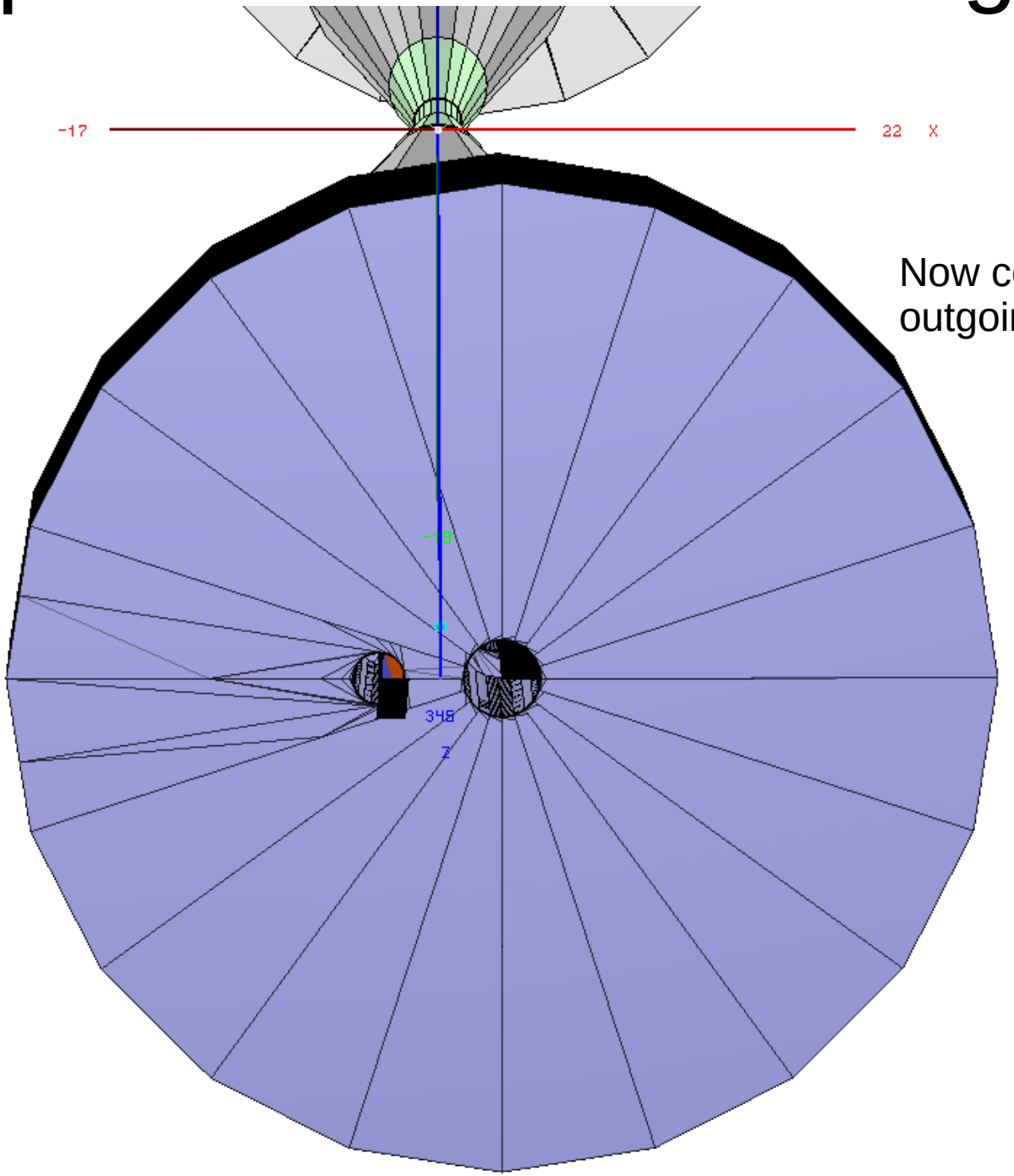
BeamCal and BeamPipe



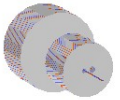
Currently concentric about the z-axis

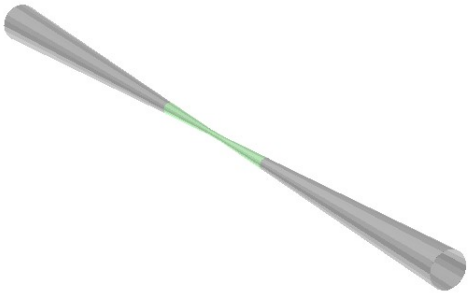


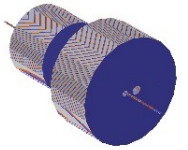
Updated BeamCal Design



Now concentric about outgoing BeamPipe

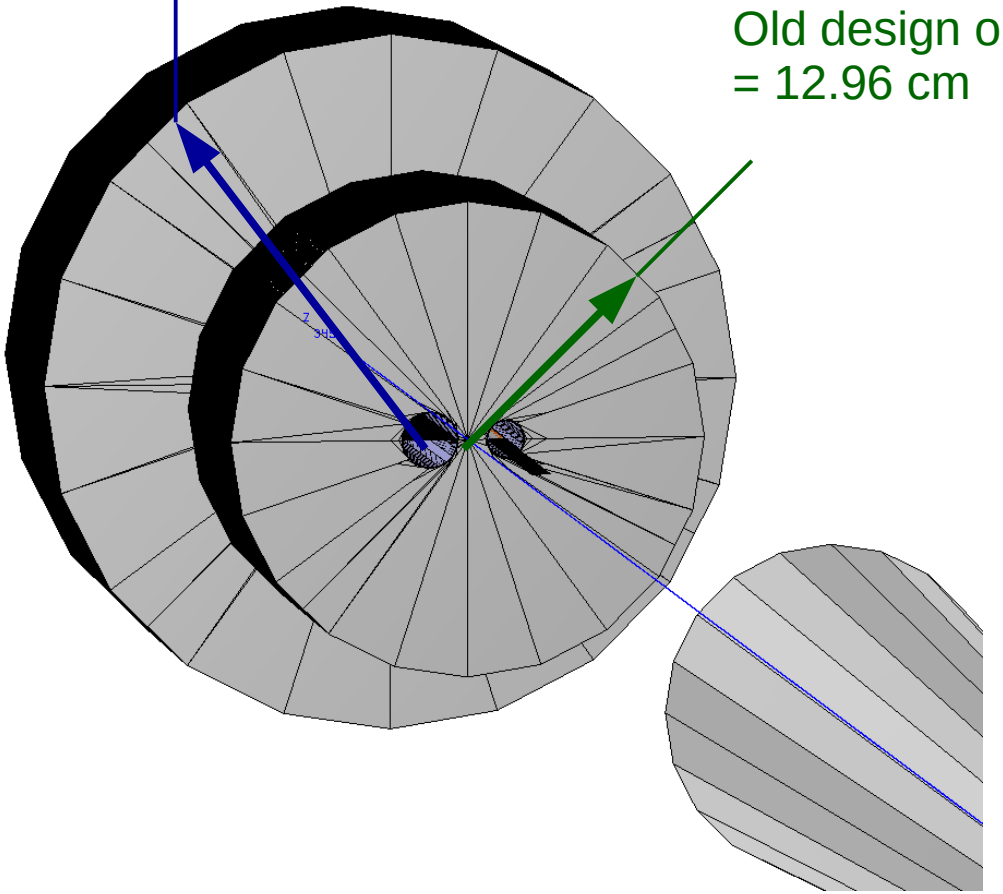






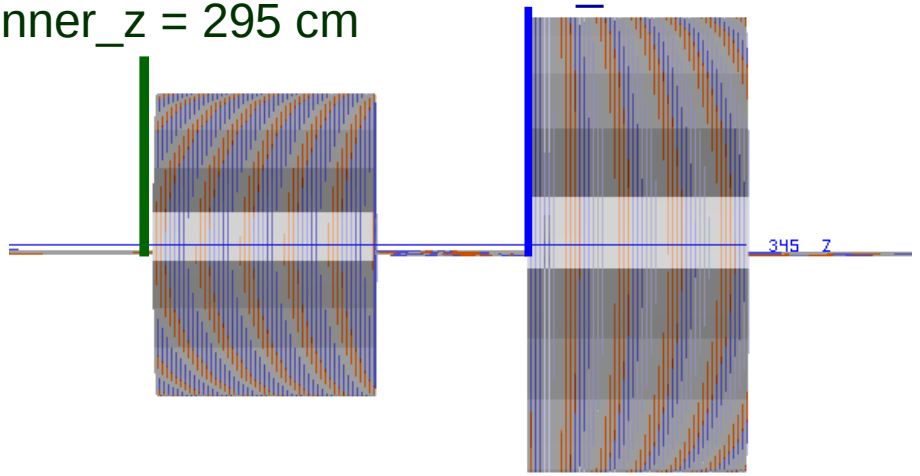
Updated design
outer_r = 19.4 cm

Old design outer_r
= 12.96 cm

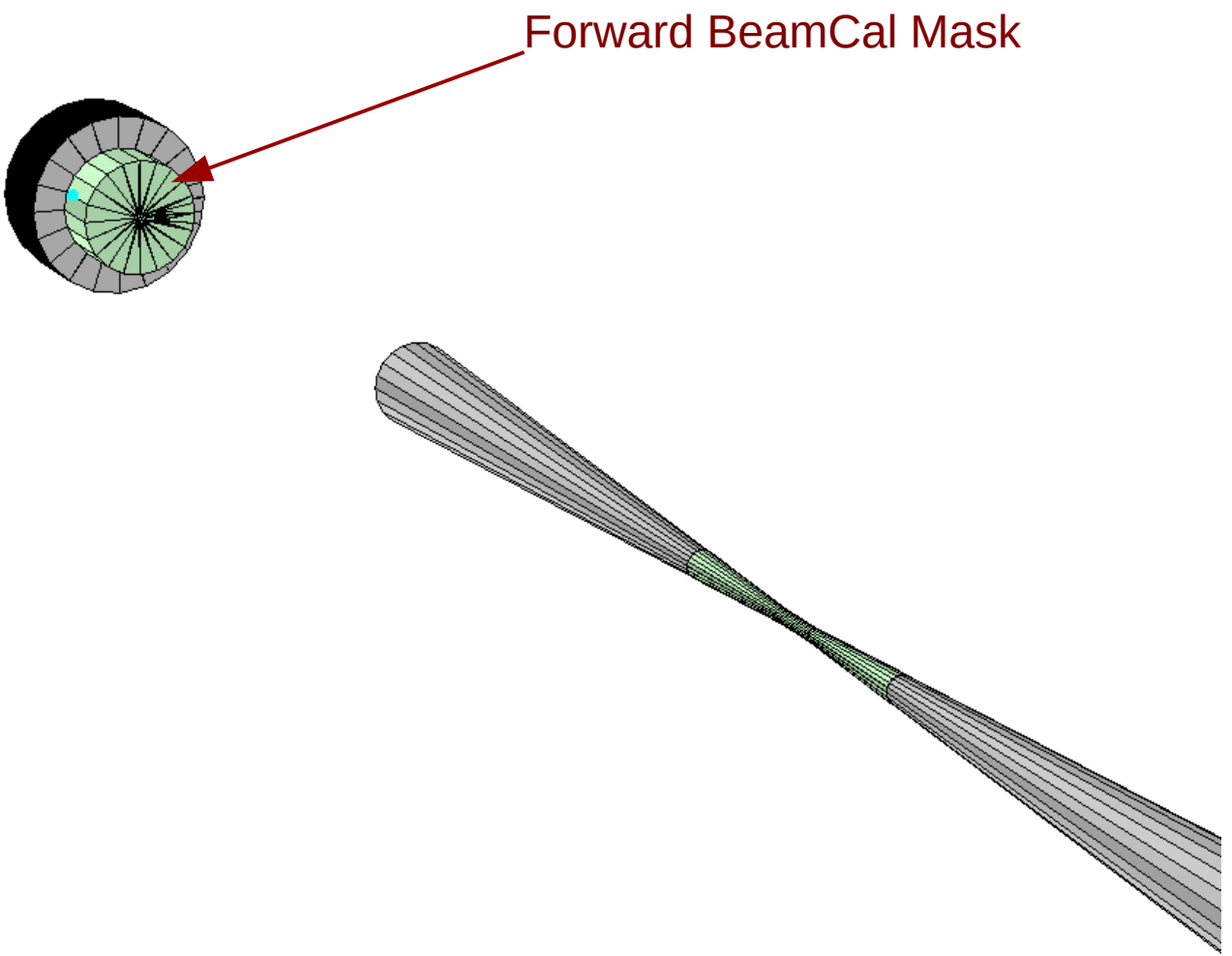


Old design
inner_z = 295 cm

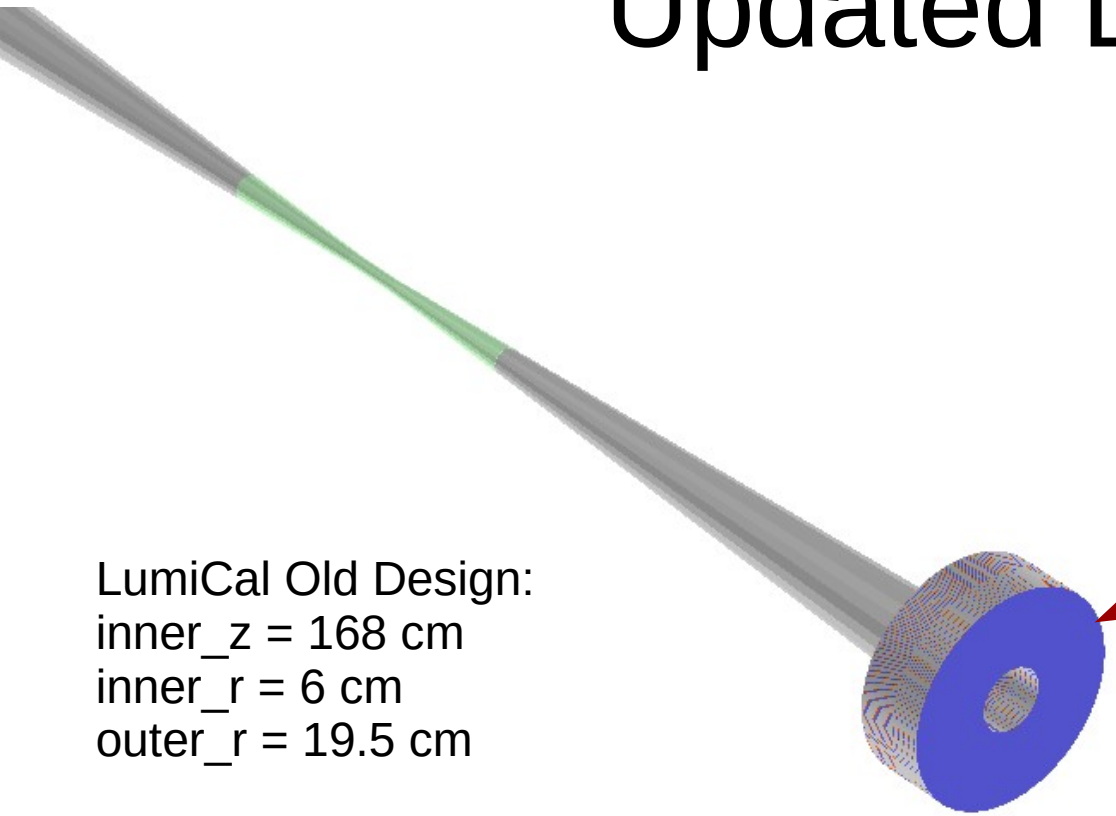
Updated design
inner_z = 326.45 cm



What is the Forward Mask's outer radius?

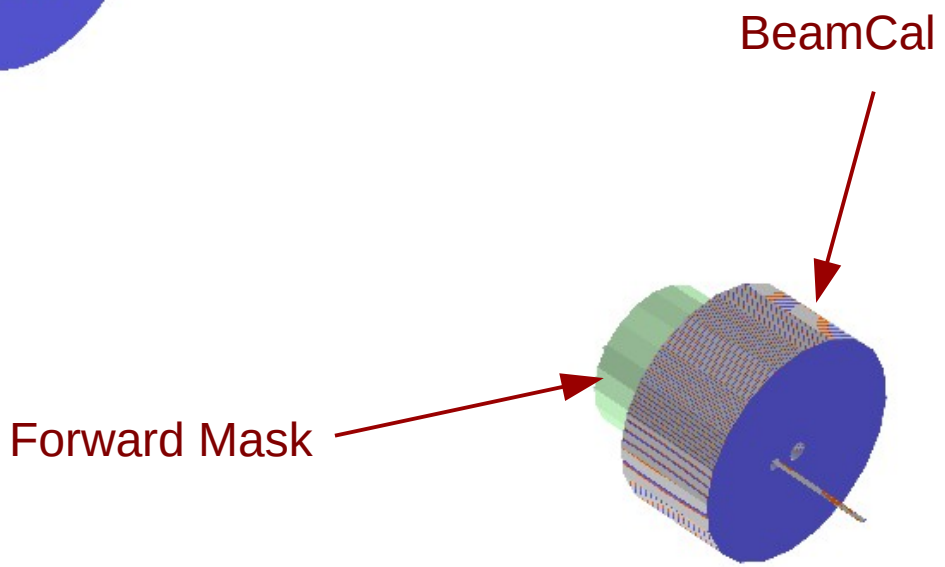


Updated LumiCal

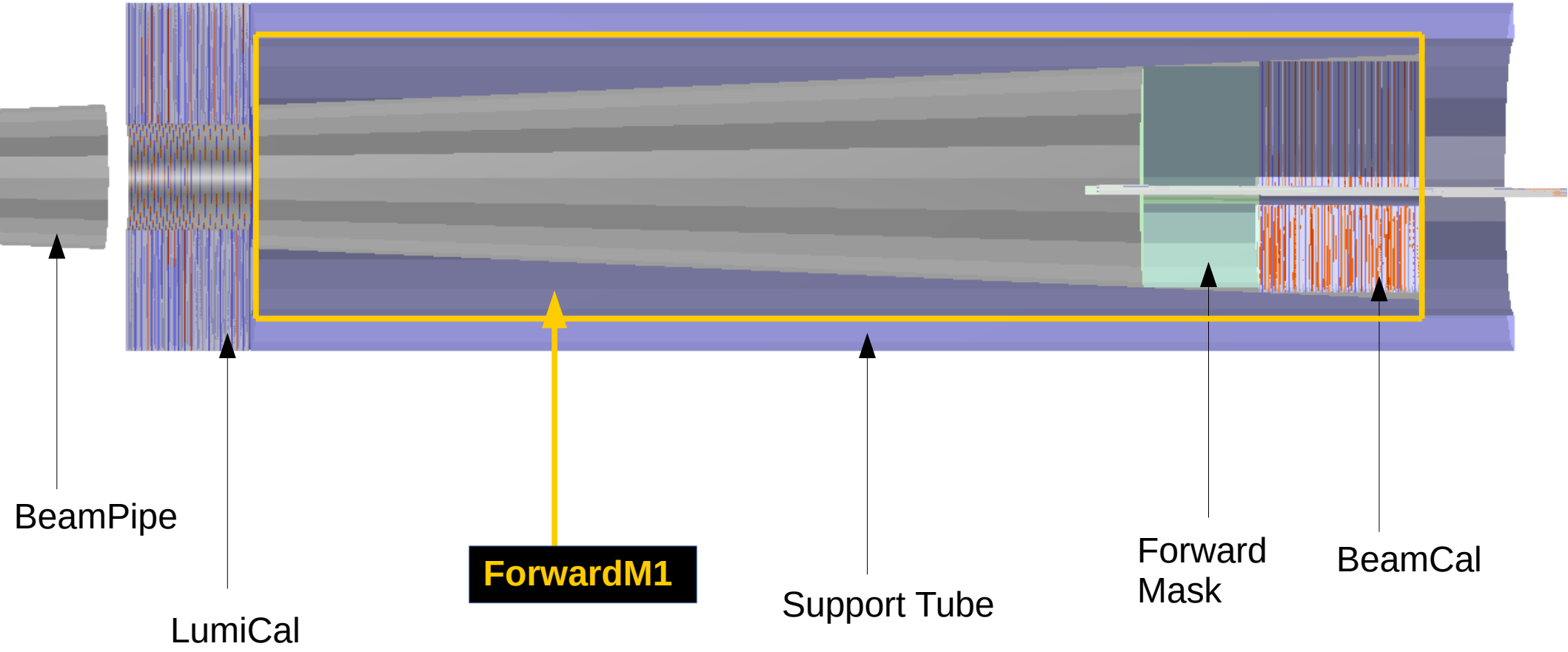


LumiCal Old Design:
inner_z = 168 cm
inner_r = 6 cm
outer_r = 19.5 cm

LumiCal Updated Design:
Inner_z = 158 cm
inner_r = 6 cm
outer_r = 20.6 cm

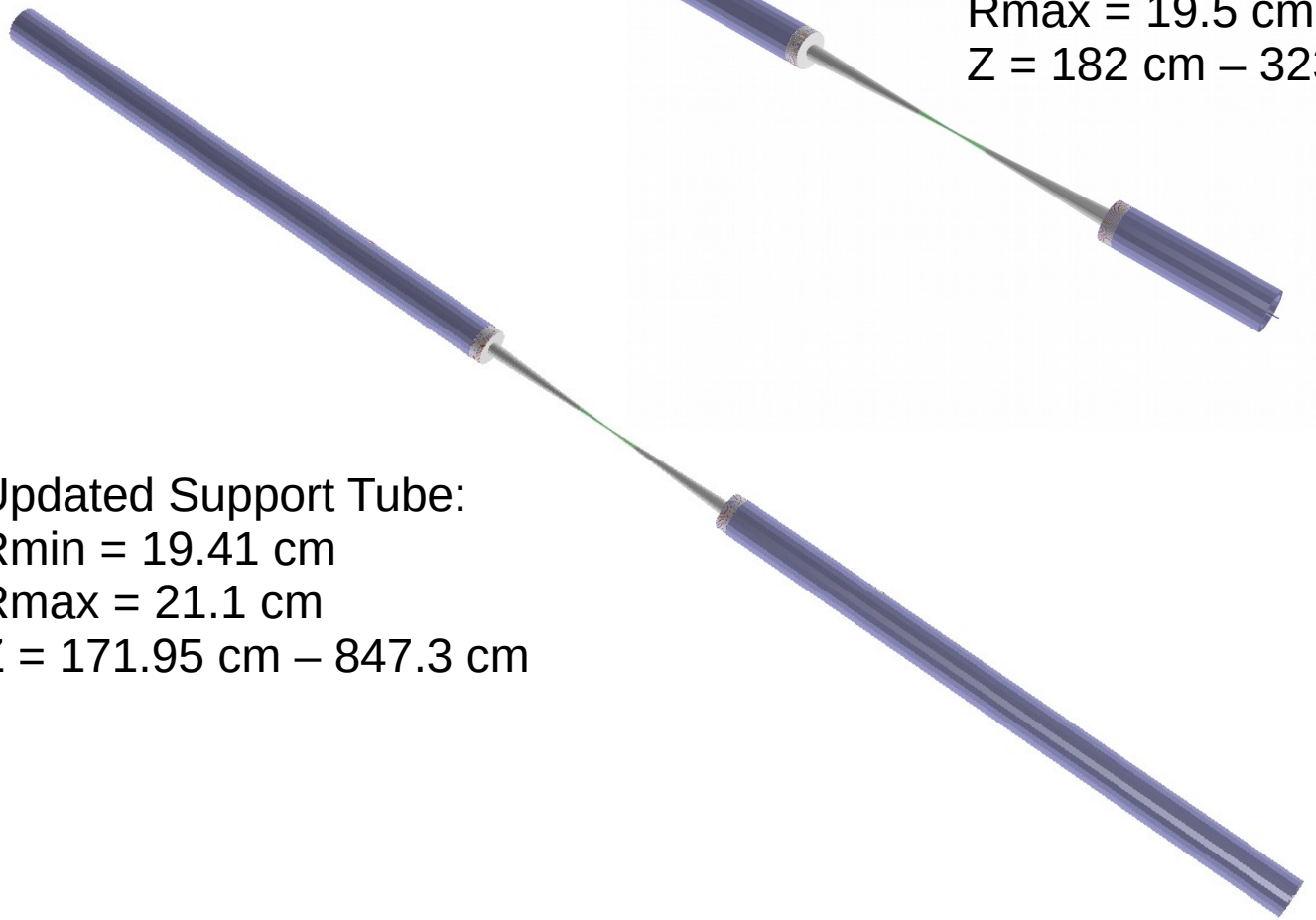


The Old design
ForwardM1 and Support Tube



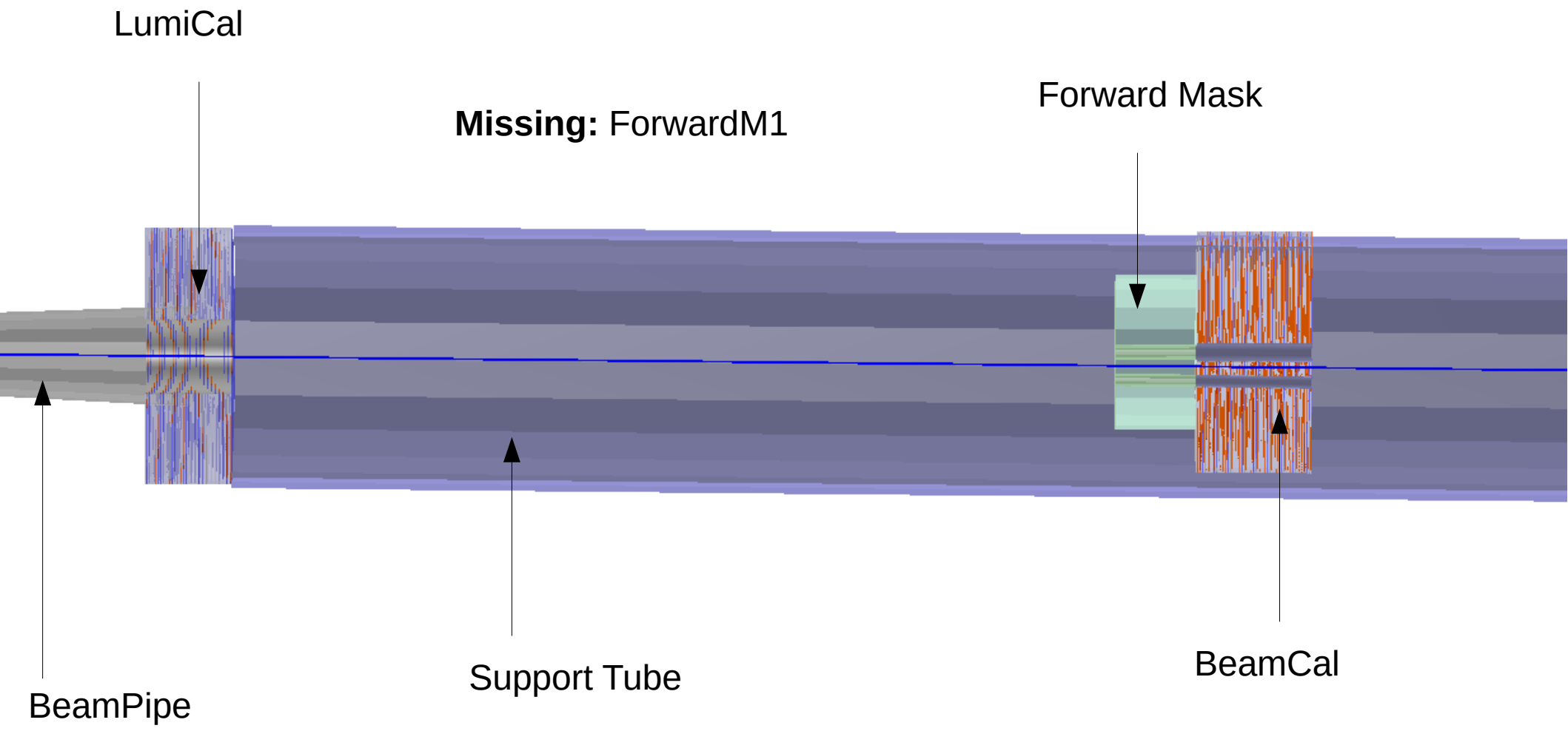
Interaction Region

Old Support Tube:
Rmin = 15.5 cm
Rmax = 19.5 cm
Z = 182 cm – 323.5 cm

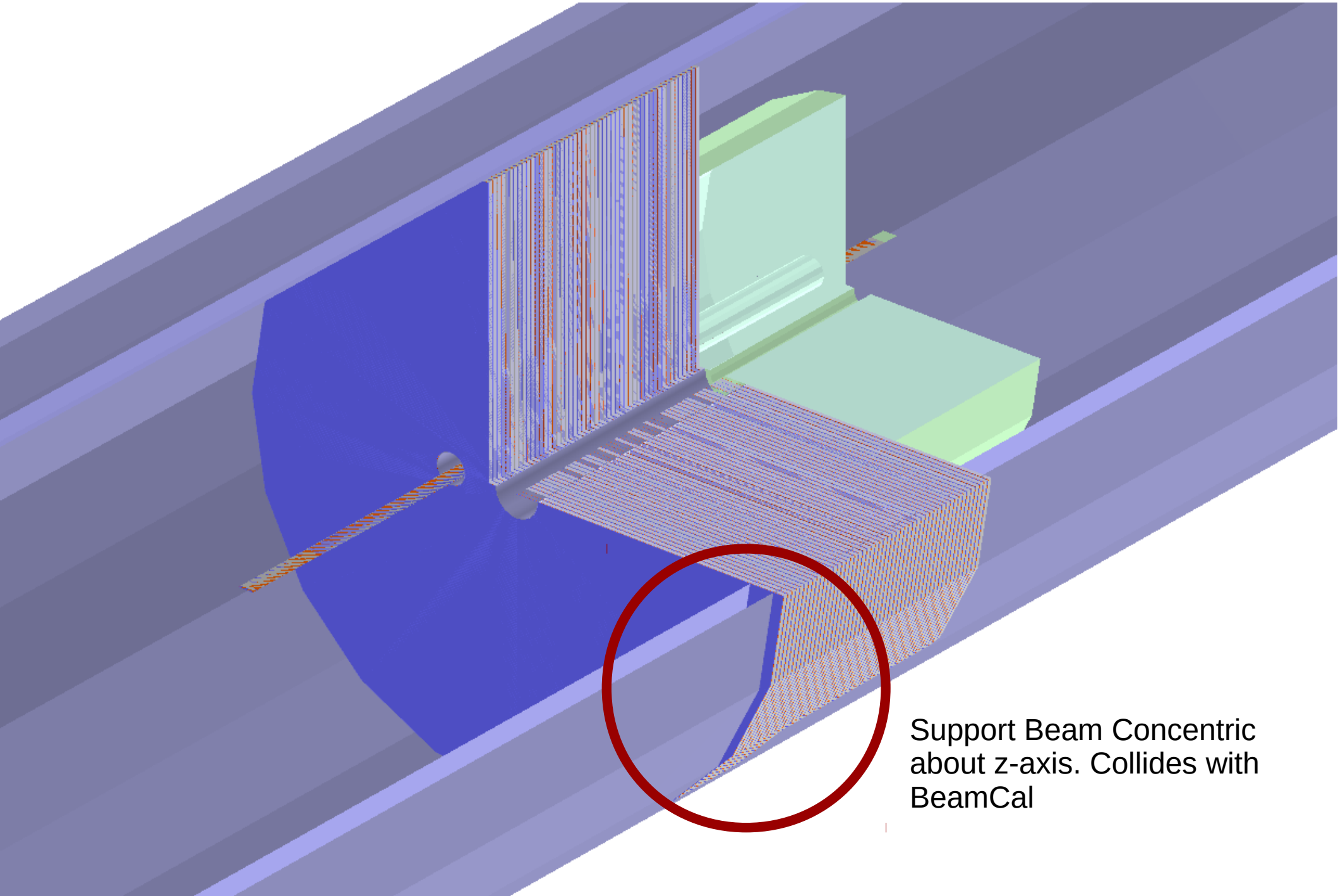


Updated Support Tube:
Rmin = 19.41 cm
Rmax = 21.1 cm
Z = 171.95 cm – 847.3 cm

Updated IR

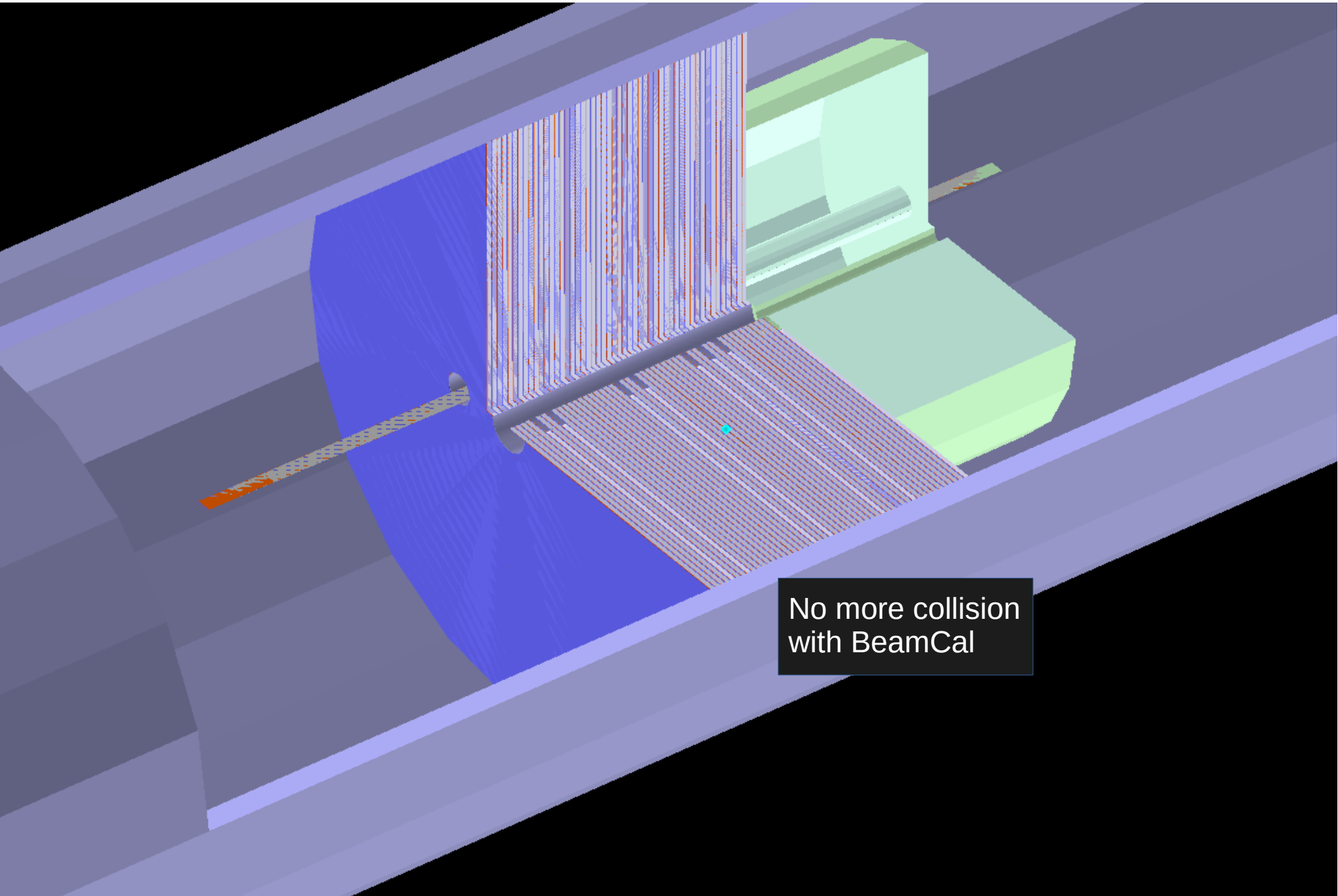

LumiCal
Missing: ForwardM1
Forward Mask
BeamPipe
Support Tube
BeamCal

Collision Problems

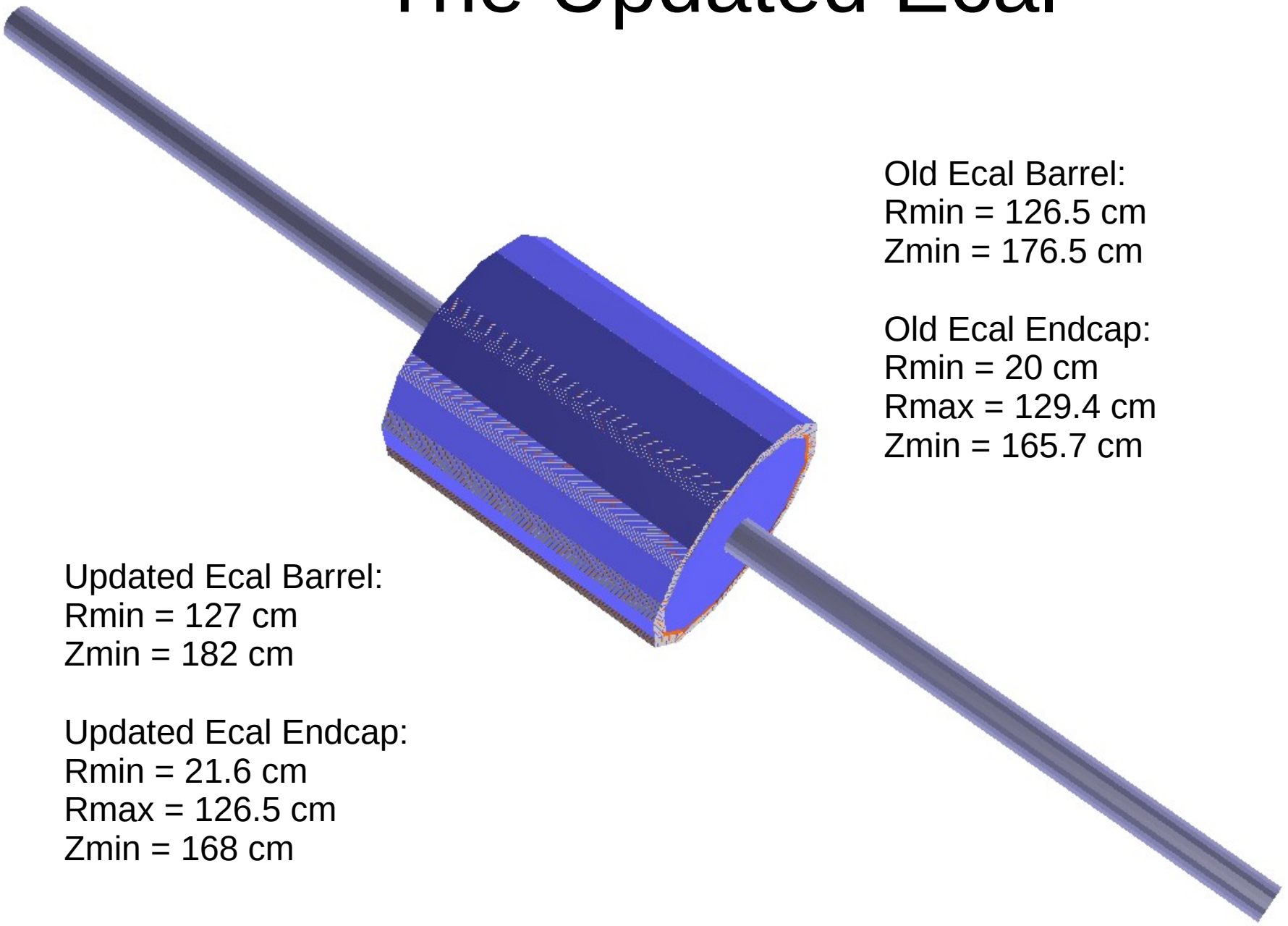


Support Beam Concentric about z-axis. Collides with BeamCal

Support Tube Concentric about outgoing BeamPipe



The Updated Ecal

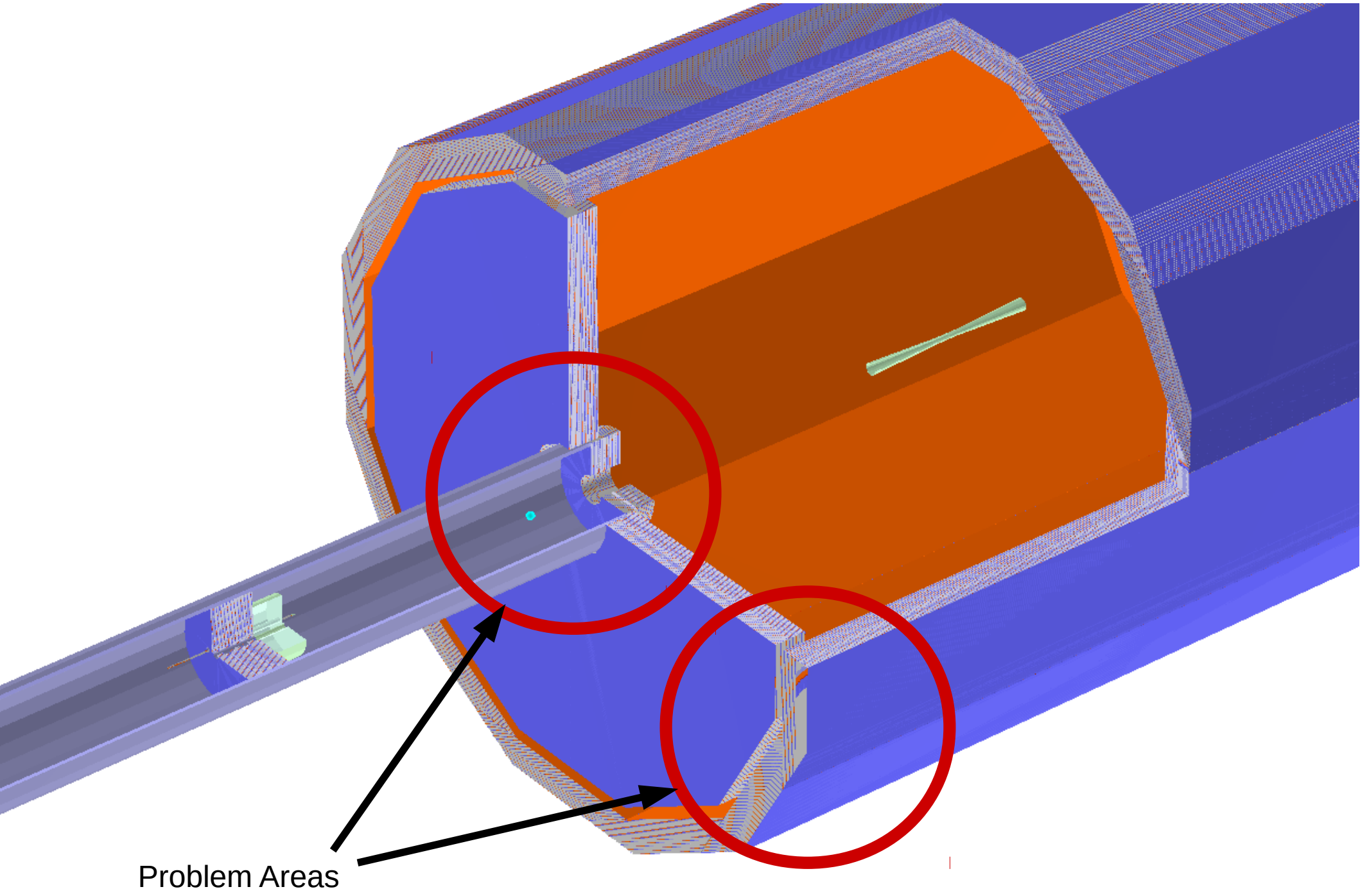


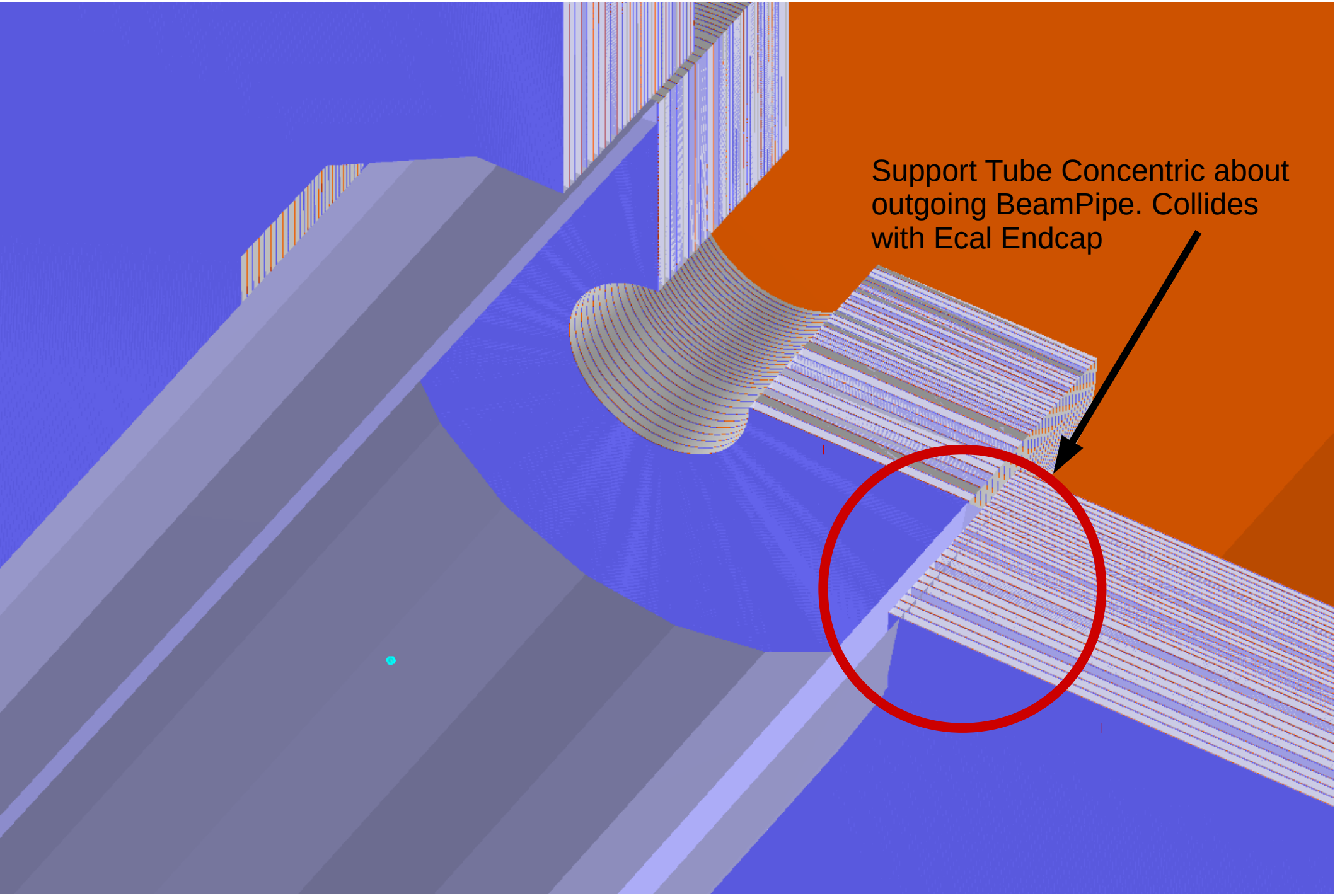
Old Ecal Barrel:
Rmin = 126.5 cm
Zmin = 176.5 cm

Old Ecal Endcap:
Rmin = 20 cm
Rmax = 129.4 cm
Zmin = 165.7 cm

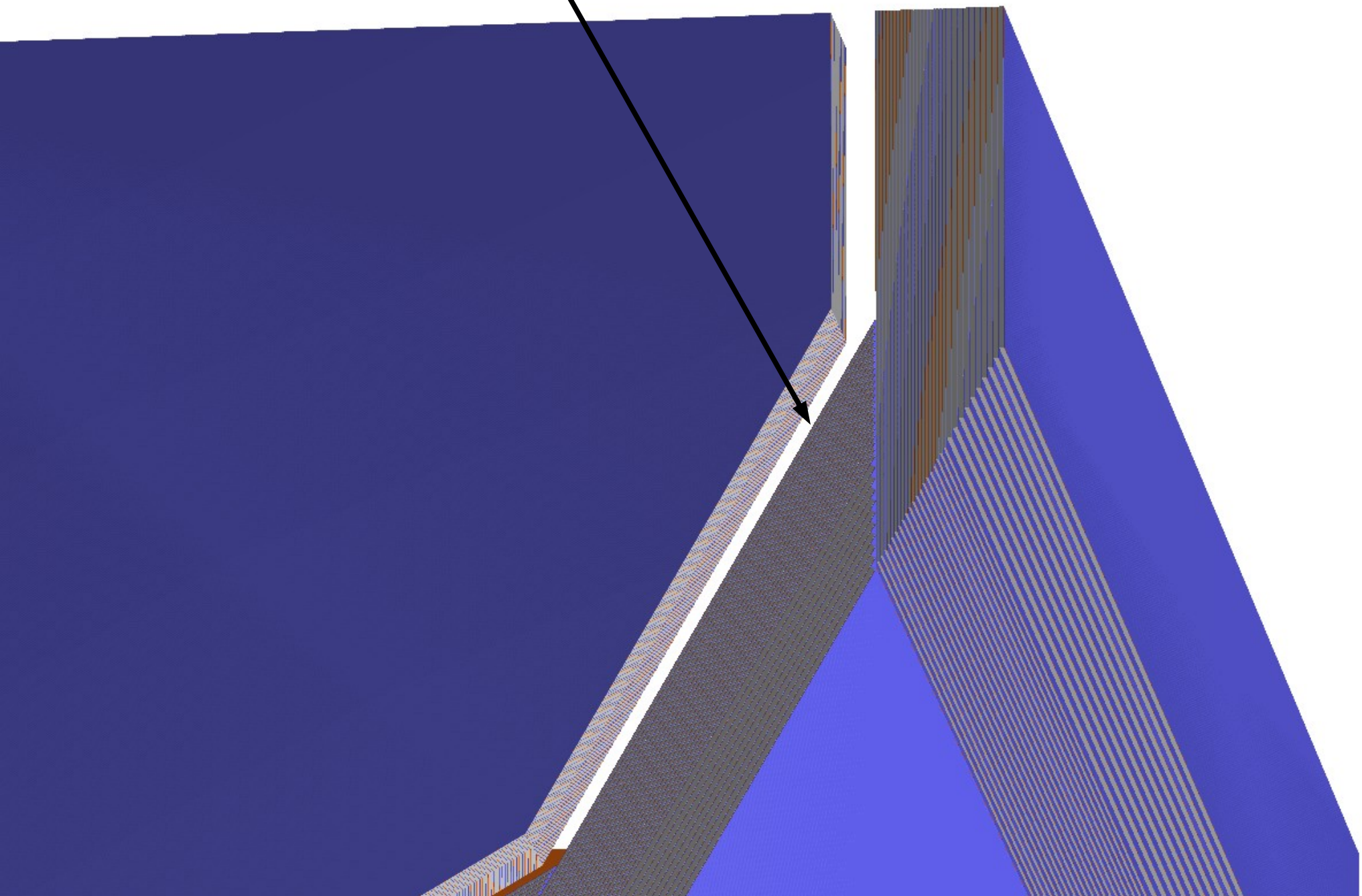
Updated Ecal Barrel:
Rmin = 127 cm
Zmin = 182 cm

Updated Ecal Endcap:
Rmin = 21.6 cm
Rmax = 126.5 cm
Zmin = 168 cm

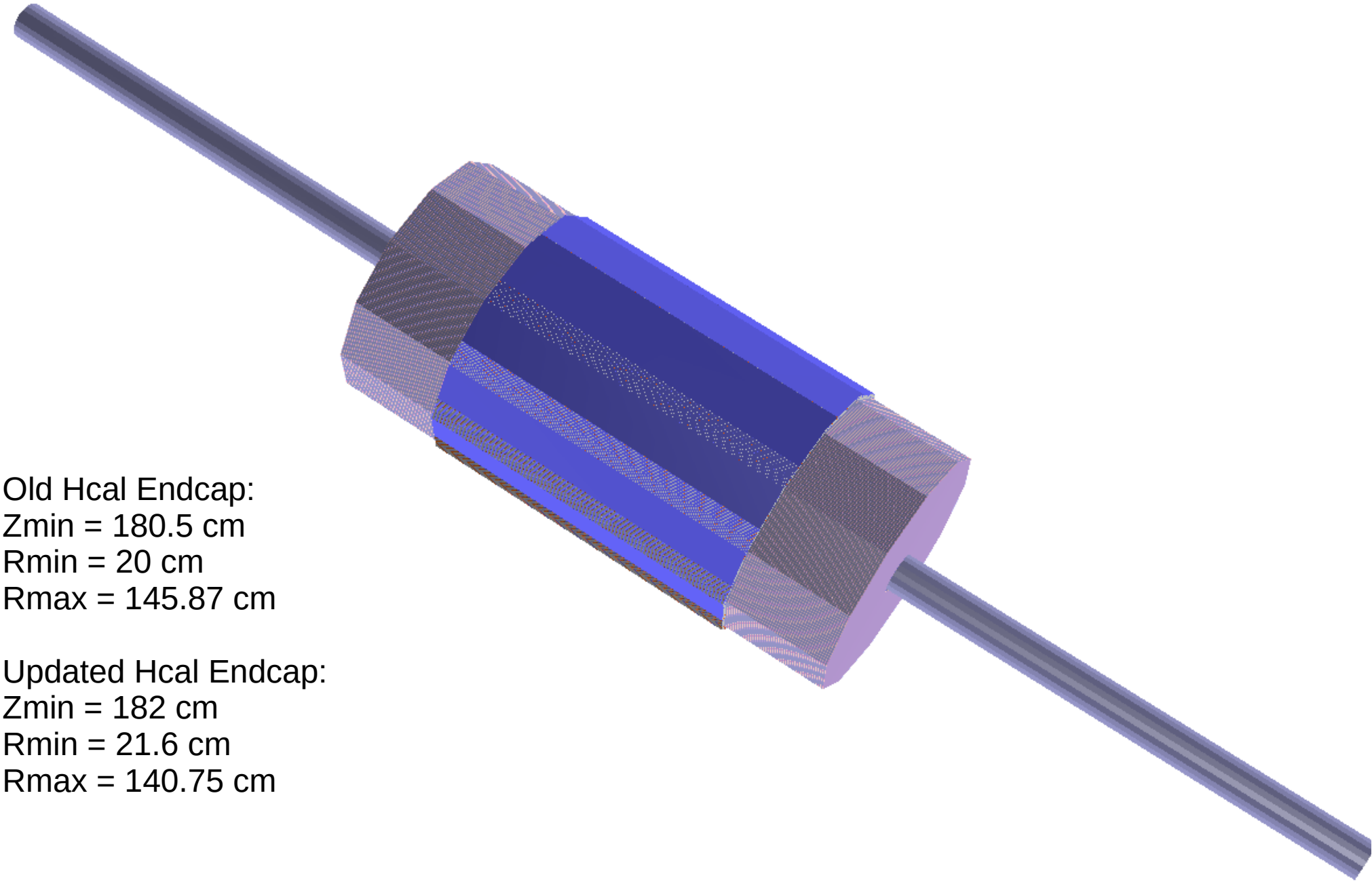

Problem Areas


Support Tube Concentric about outgoing BeamPipe. Collides with Ecal Endcap

Gap between Ecal Endcap and Ecal Barrel
due to unkown Barrel layer thicknesses

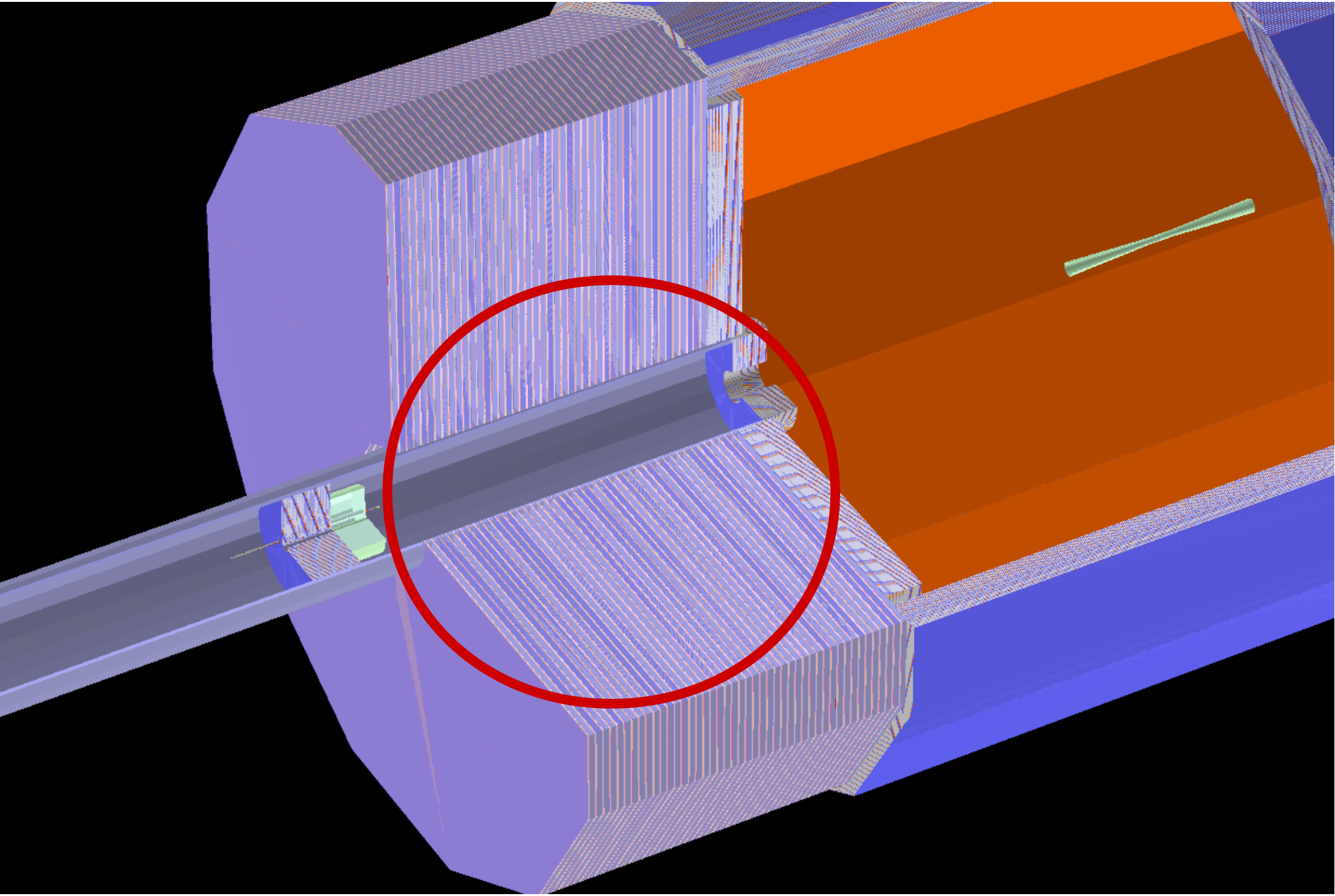


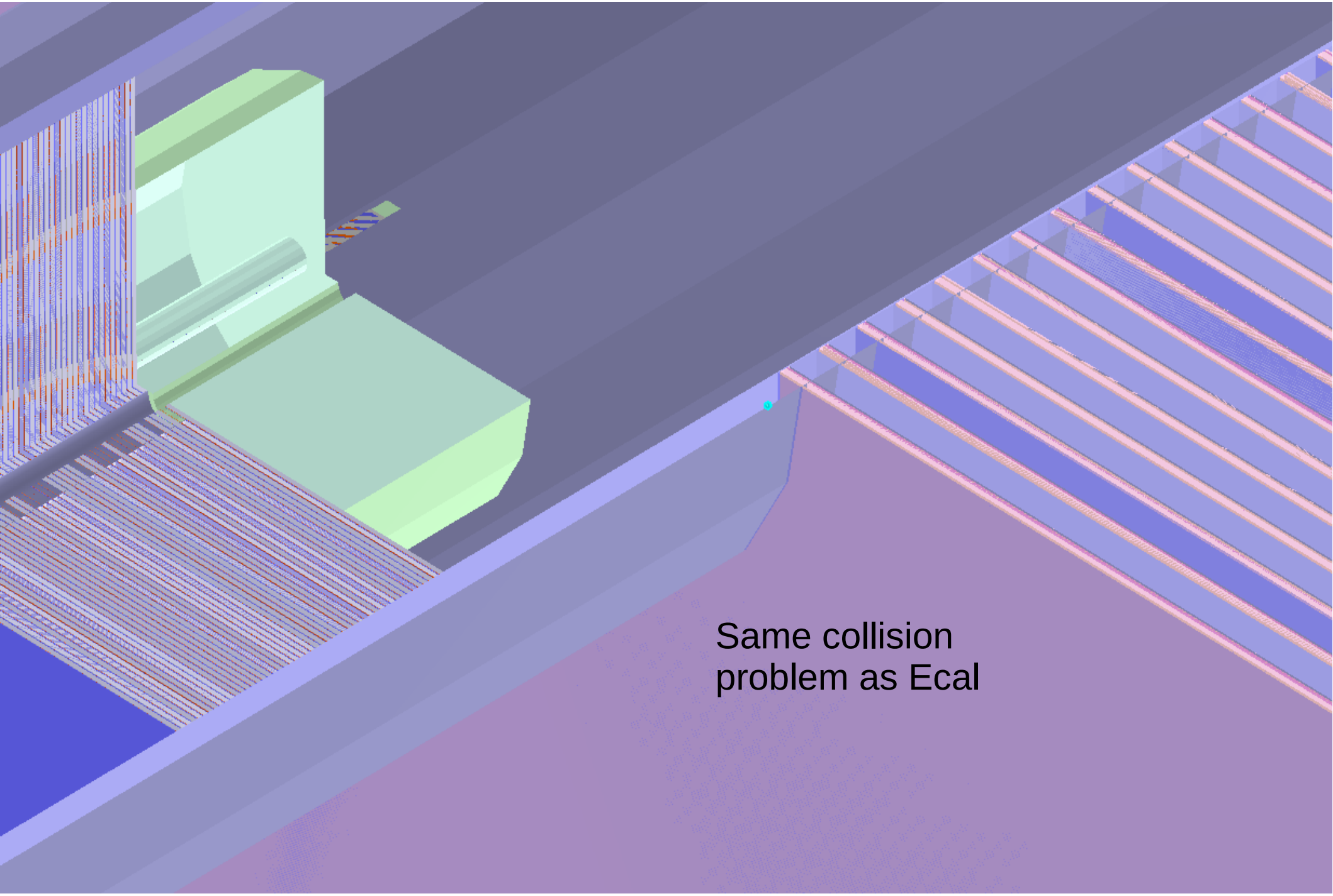
Hcal Endcap



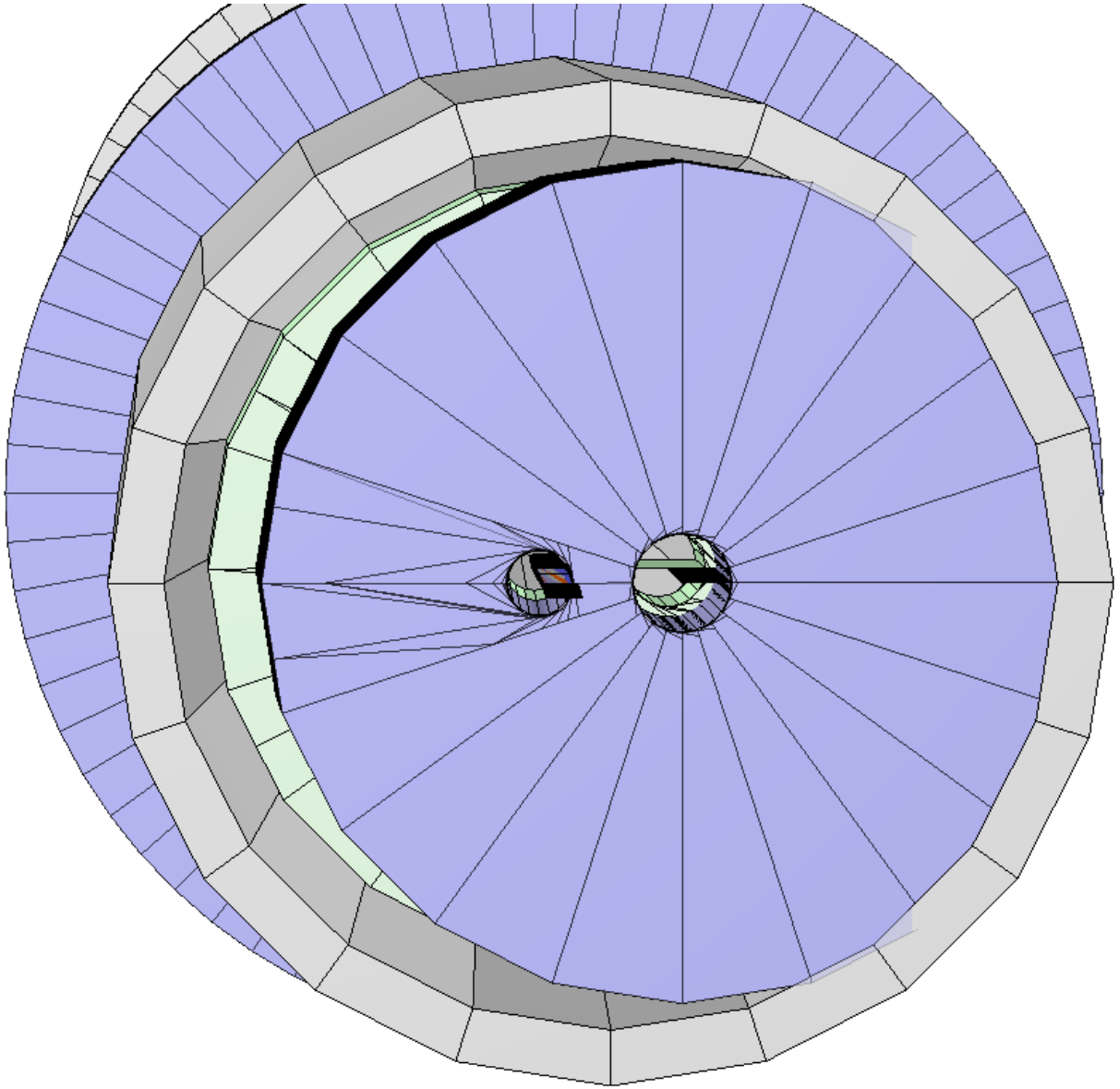
Old Hcal Endcap:
Zmin = 180.5 cm
Rmin = 20 cm
Rmax = 145.87 cm

Updated Hcal Endcap:
Zmin = 182 cm
Rmin = 21.6 cm
Rmax = 140.75 cm




Same collision
problem as Ecal

ForwardM1 with BeamPipe-centric BeamCal



All old values, but with BeamCal rotated to be concentric about the outgoing BeamPipe.

The BeamCal clips into the ForwardM1