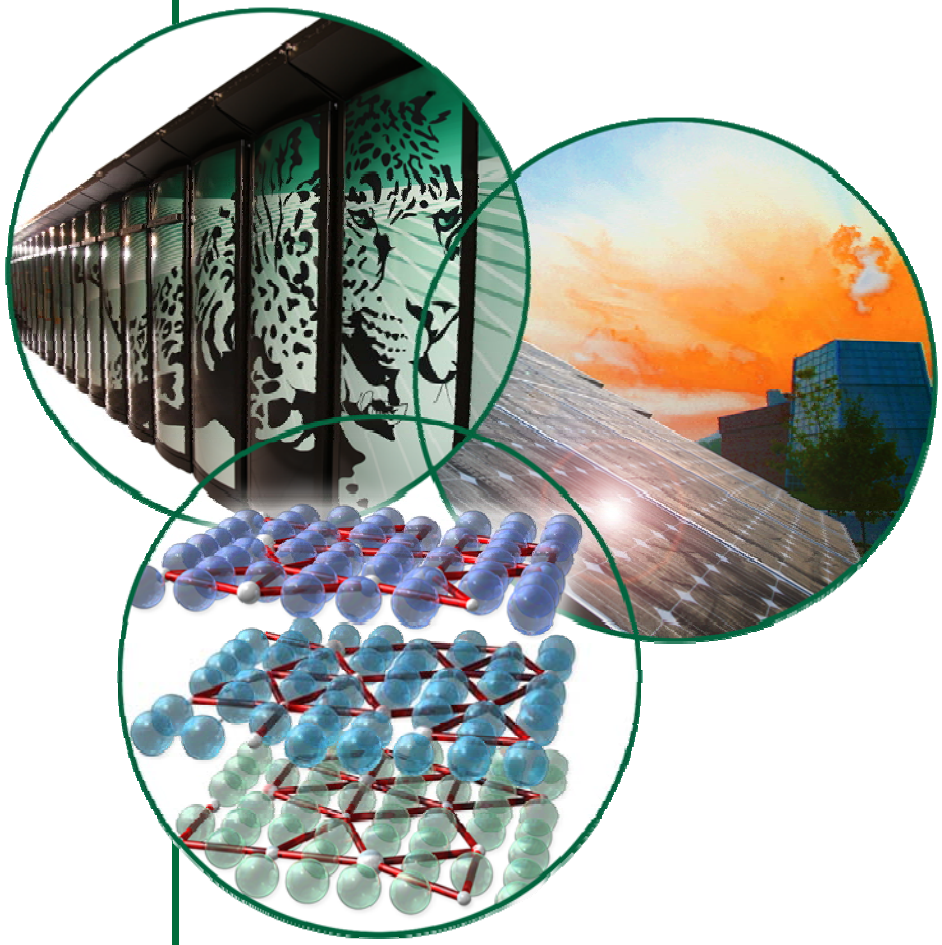
20to2T5m Beam Path

Van Graves



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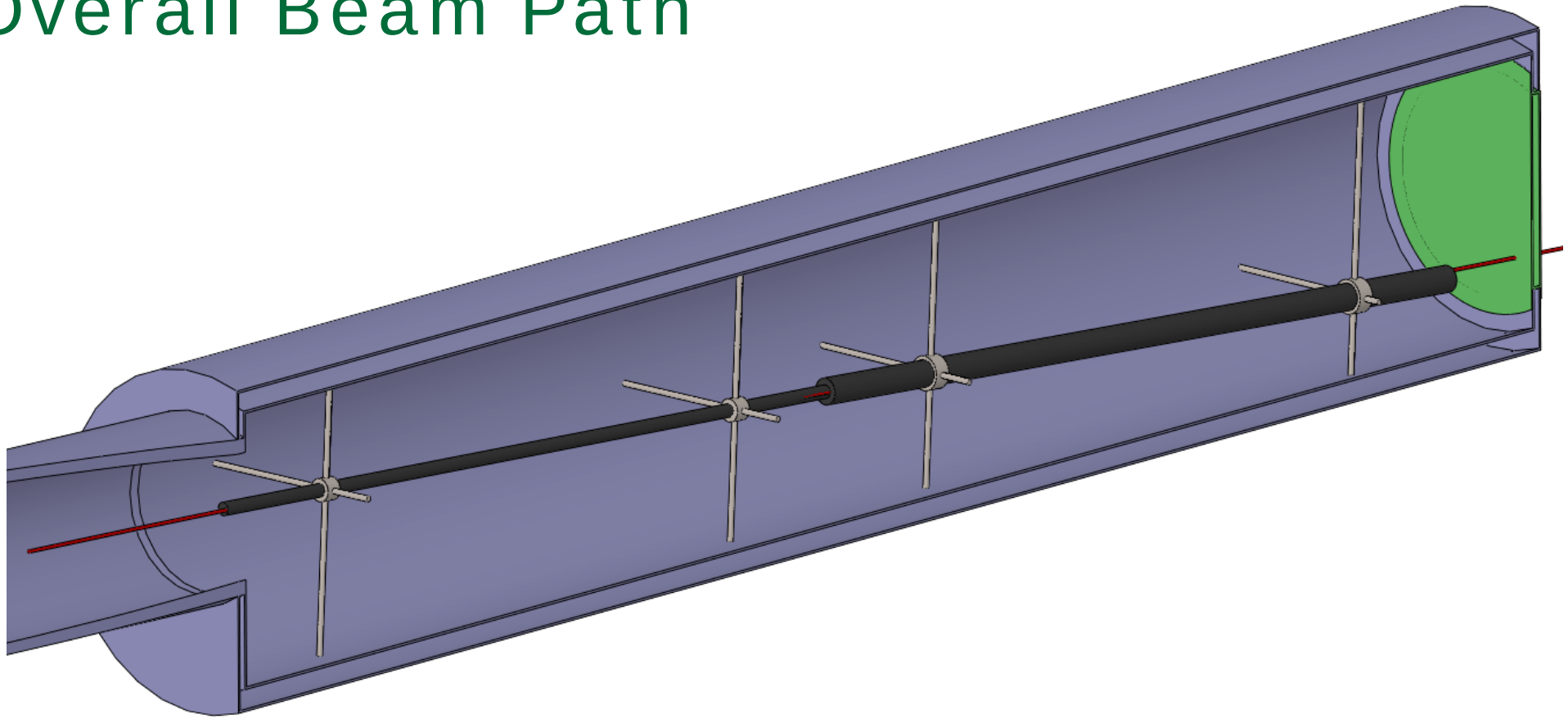
U.S. DEPARTMENT OF ENERGY

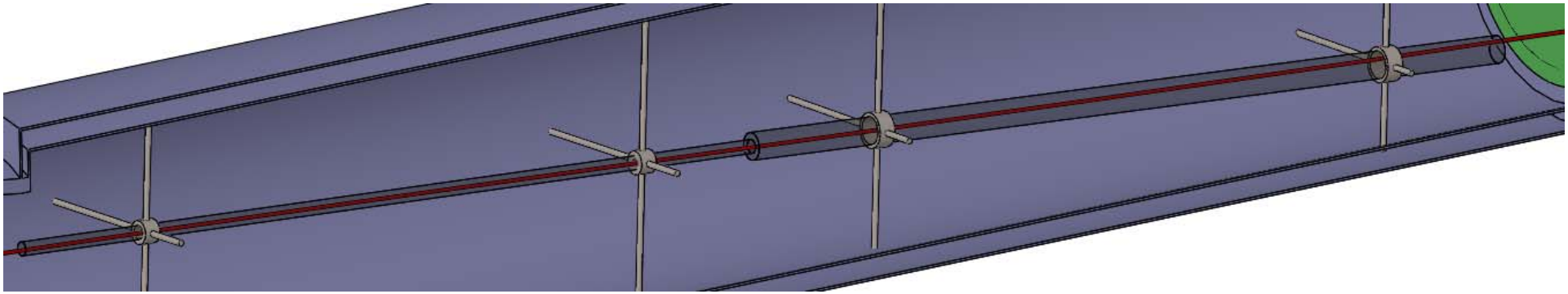
OAK RIDGE NATIONAL LABORATORY
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

Geometry

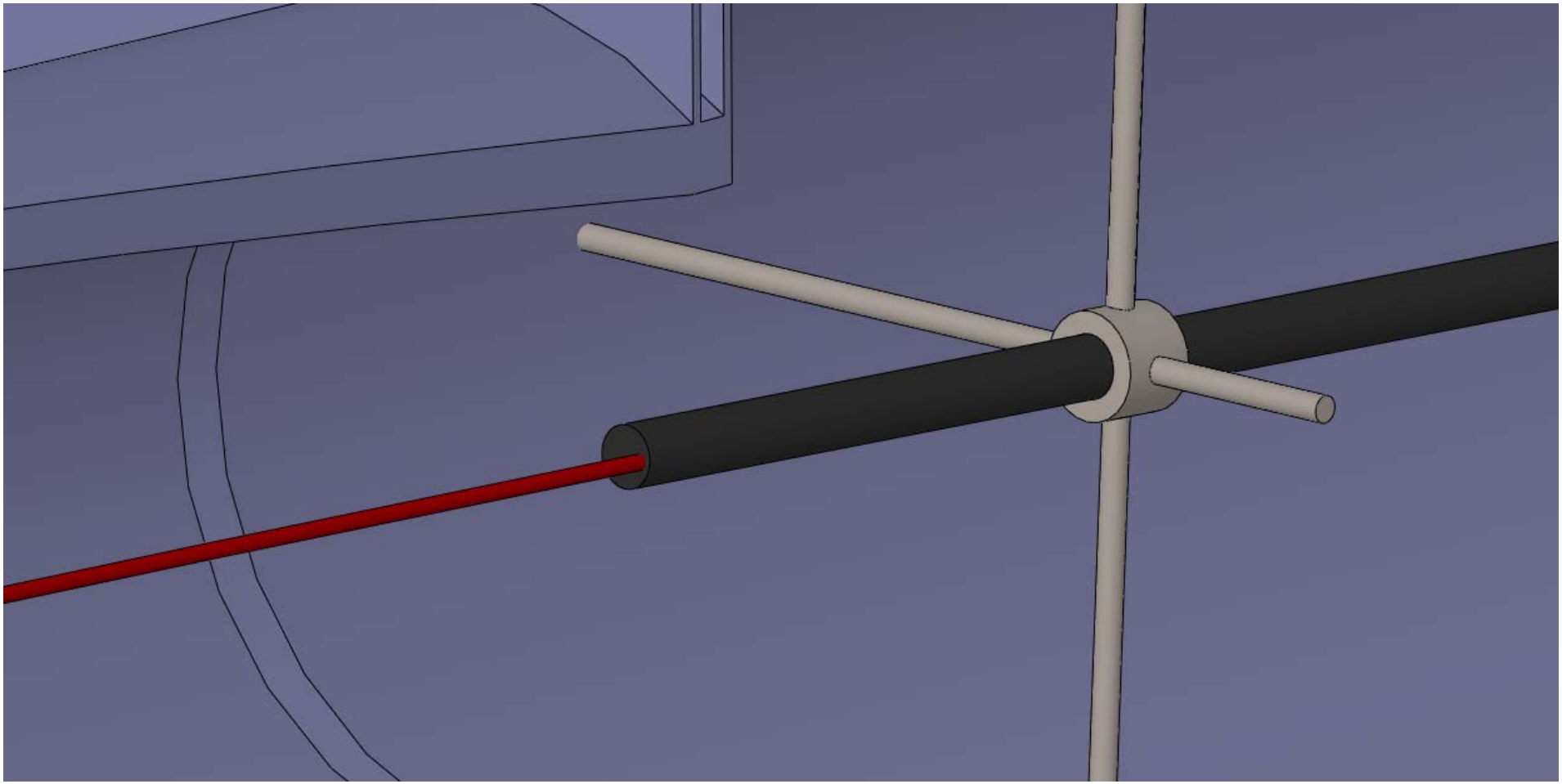
- From Ding's presentation Beam Dump for Carbon Target with IDS120h Configuration at 6.75 GeV (updated) & Kirk McDonald guidance
- Target
  - Radius: 0.58cm, length: 75cm, angle to yz plane: -59mrad
  - Center of target at Z=0
- Beam dump (case 6)
  - Radius: 1.09cm, length: 75cm, angle to yz plane: -59mrad, angle to xz plane: 30.9mrad
  - Start of beam dump at Z=37.5
- Beam diameter: 0.290 cm (modeled as constant diameter)
- Beam path: Souchlas data file BEAM_CENTROID_TRACK_20to2T5m.txt (Jan 30, 2014)

Overall Beam Path

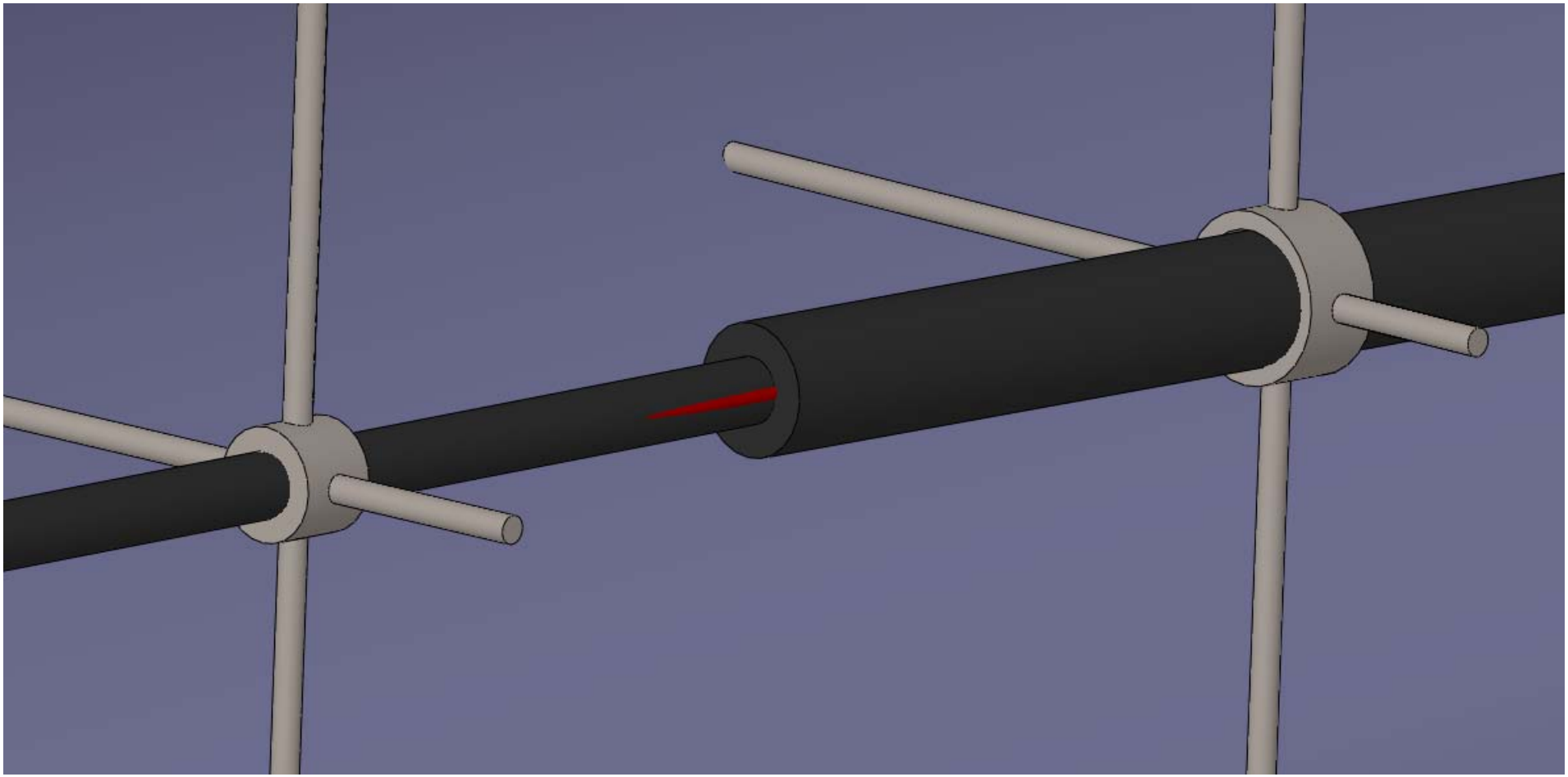




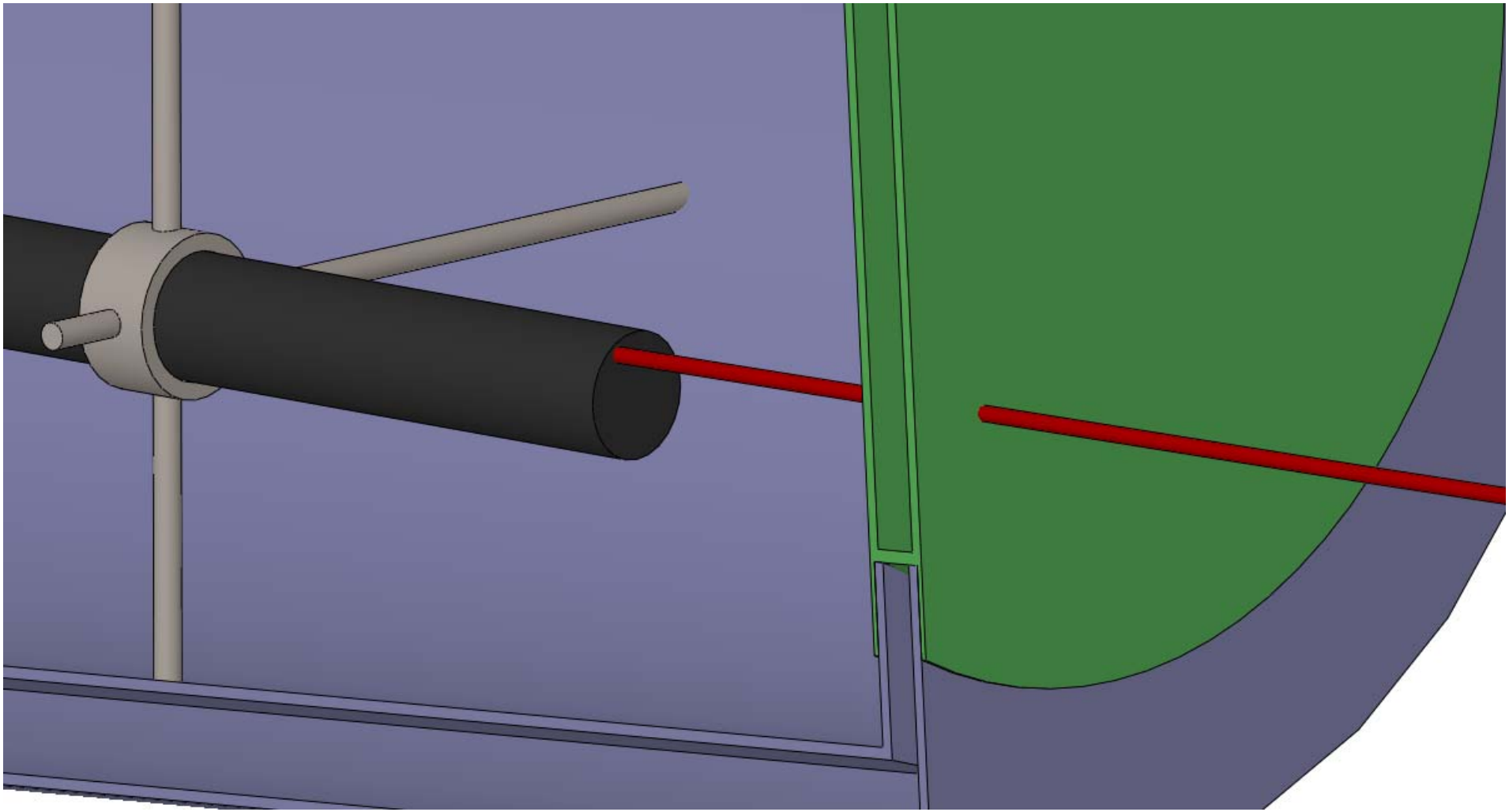
Beam Enters Target (Z=-37.5)



Target – Beam Dump Transition (Z=+37.5)



Beam Exit (Z=+112.5)



Containing Beam Within Target

- 75cm target exposes constant-diameter beam
- Keeping symmetric target centered on Z=0 requires shortening target length to 69cm
  - Could have asymmetric target (-37.5 < z < +34.5)
  - Values change for non-constant beam diameter