PCAL Design Status

CLAS12 Collaboration Meeting
2/21/2008

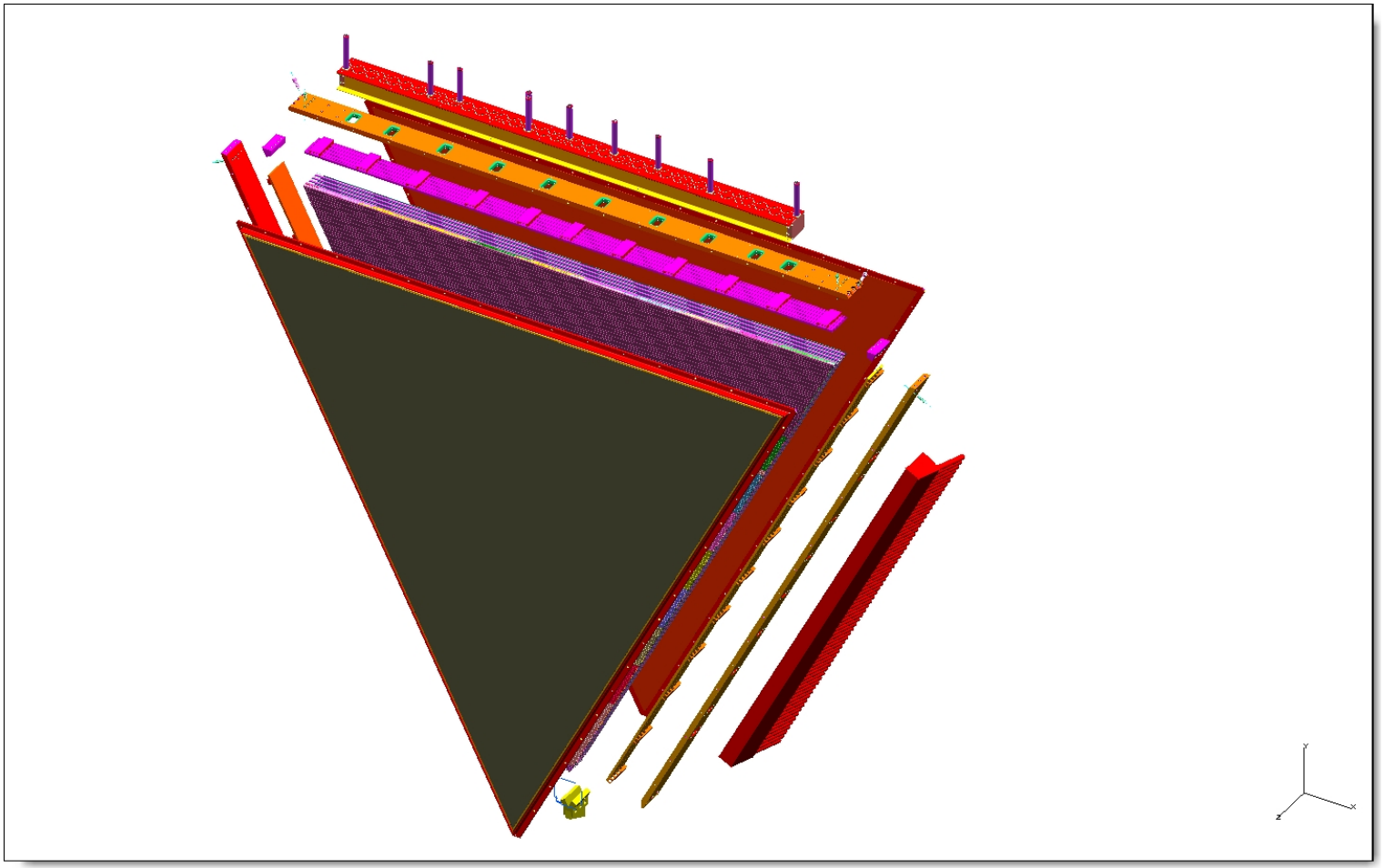
Design Overview

- Similar to the EC, but simpler
  - Non pointing geometry
  - 15 layers of scintillator
  - 14 layers of lead
  - U,V,W readout with V&W on back side
  - Larger acceptance than the ECAL

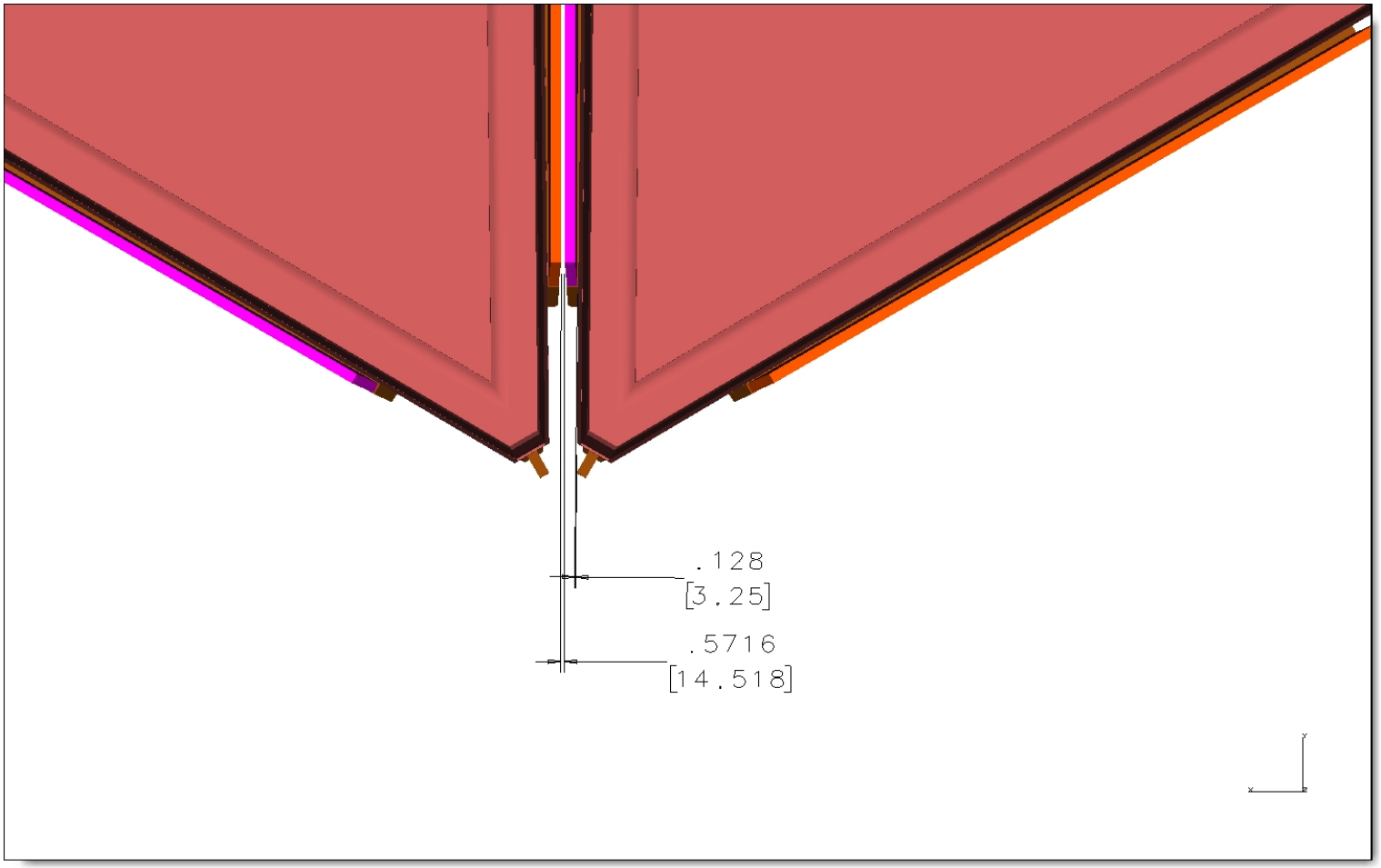
Design Status

- Window design and analysis complete
  - Partial Full Scale prototype being fabricated for testing
- PMT Housing Design complete and Prototypes built and used in a complete PCAL prototype
  - Cosmic tests complete
  - Testing during g12b
- Overall Box Size growing to give larger acceptance and allowed by move of W readout to back.
- CAD model for box nearly complete.
- Design for support of “guts” nearly complete
- Headers for PMT mounting and fiber routing designed

3d CAD Model

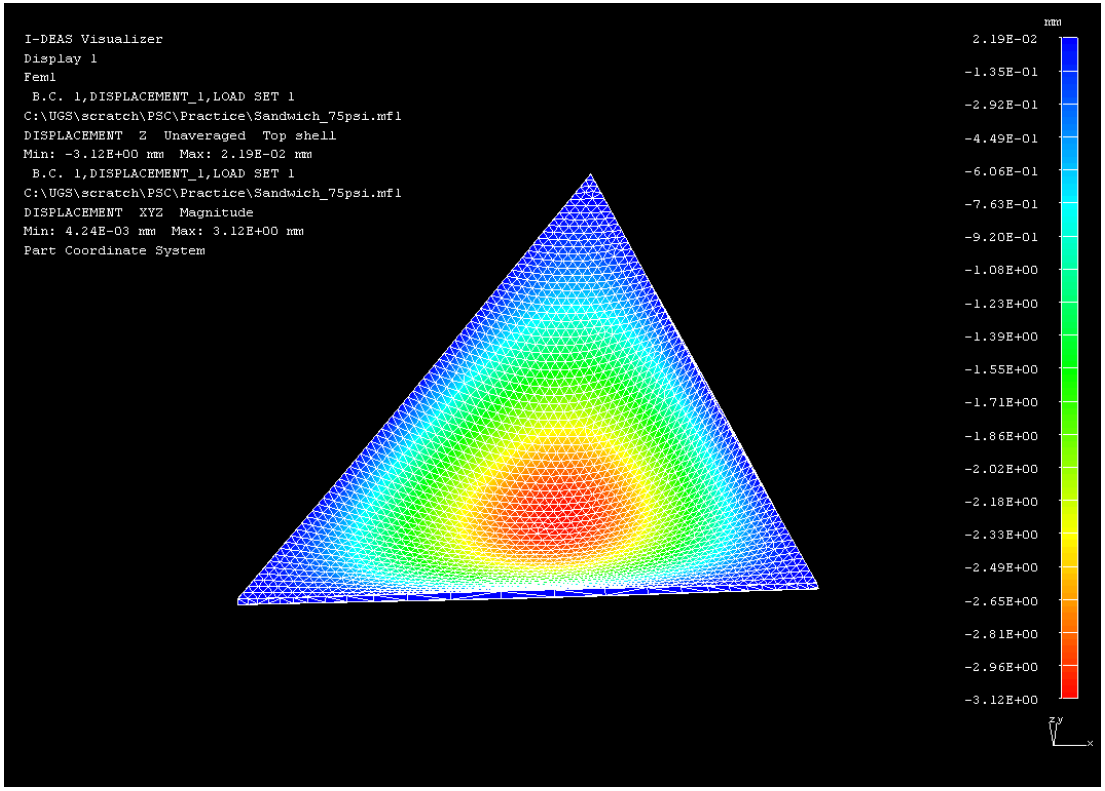


Why we went to W on the back with V



JLab Window Analysis

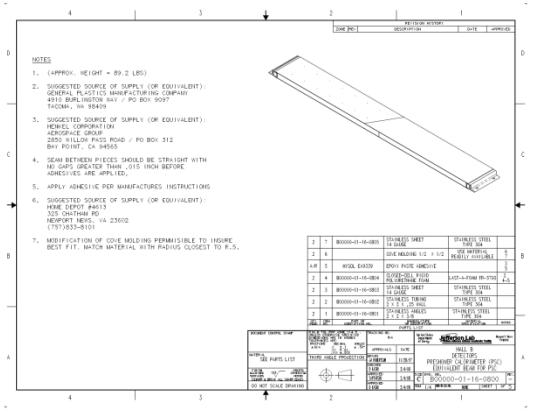
- Analysis shows 3.2mm (0.126 inch) deflection worst case

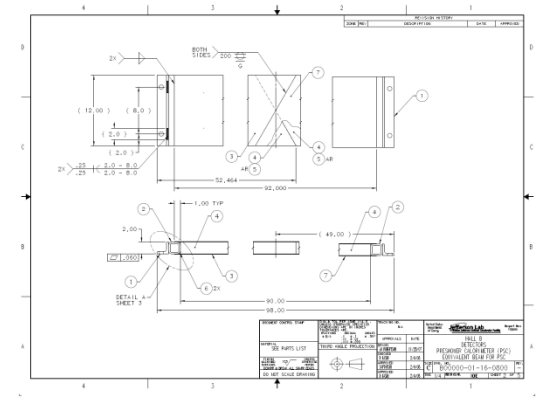


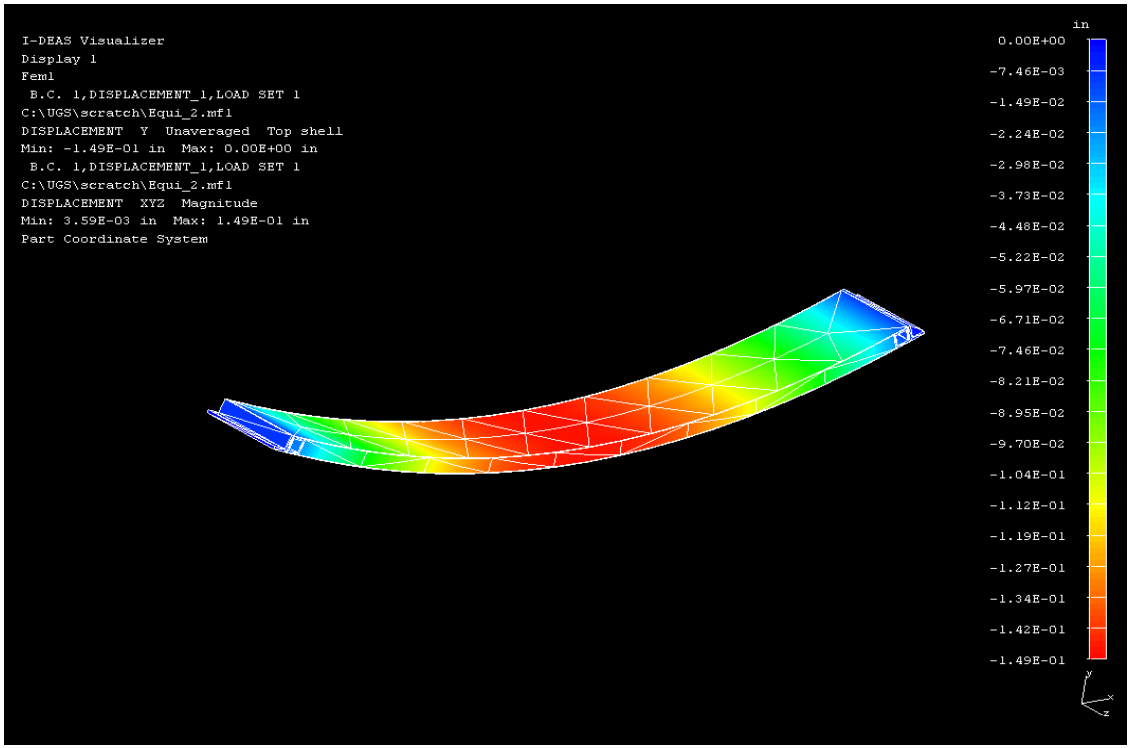
Window Prototype Model

Calculated Deflection under max load

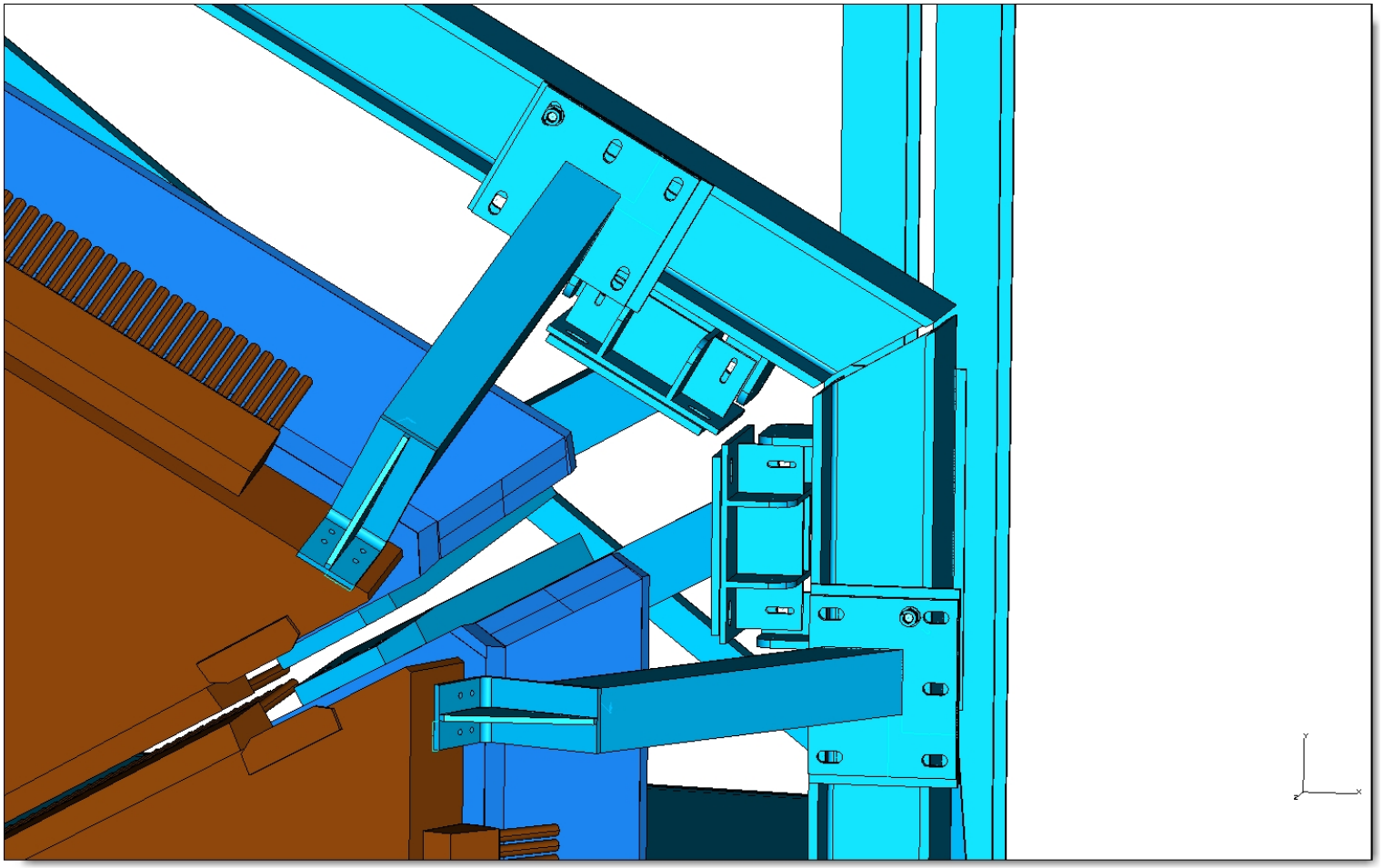
3.8mm(0.15 inch)



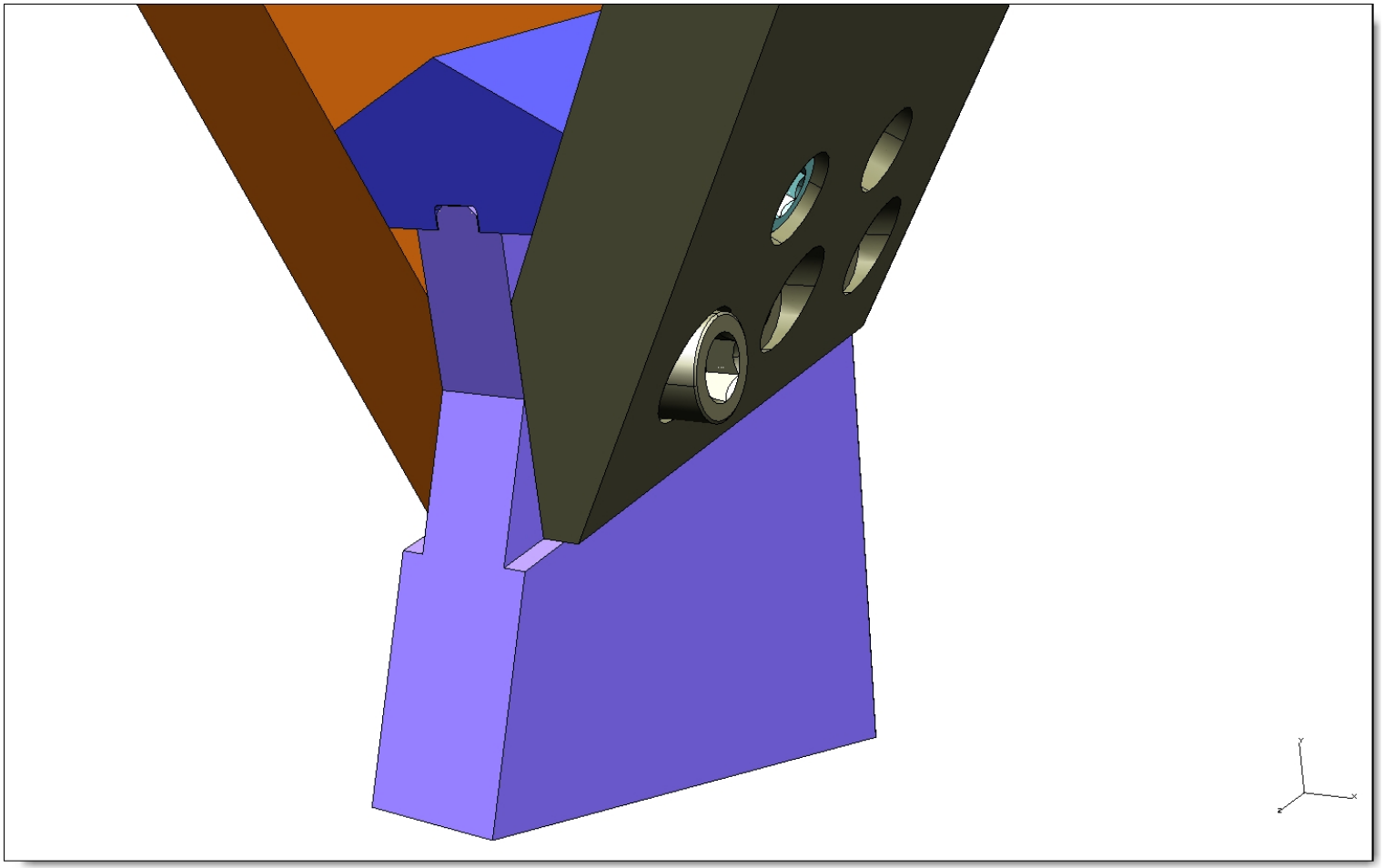




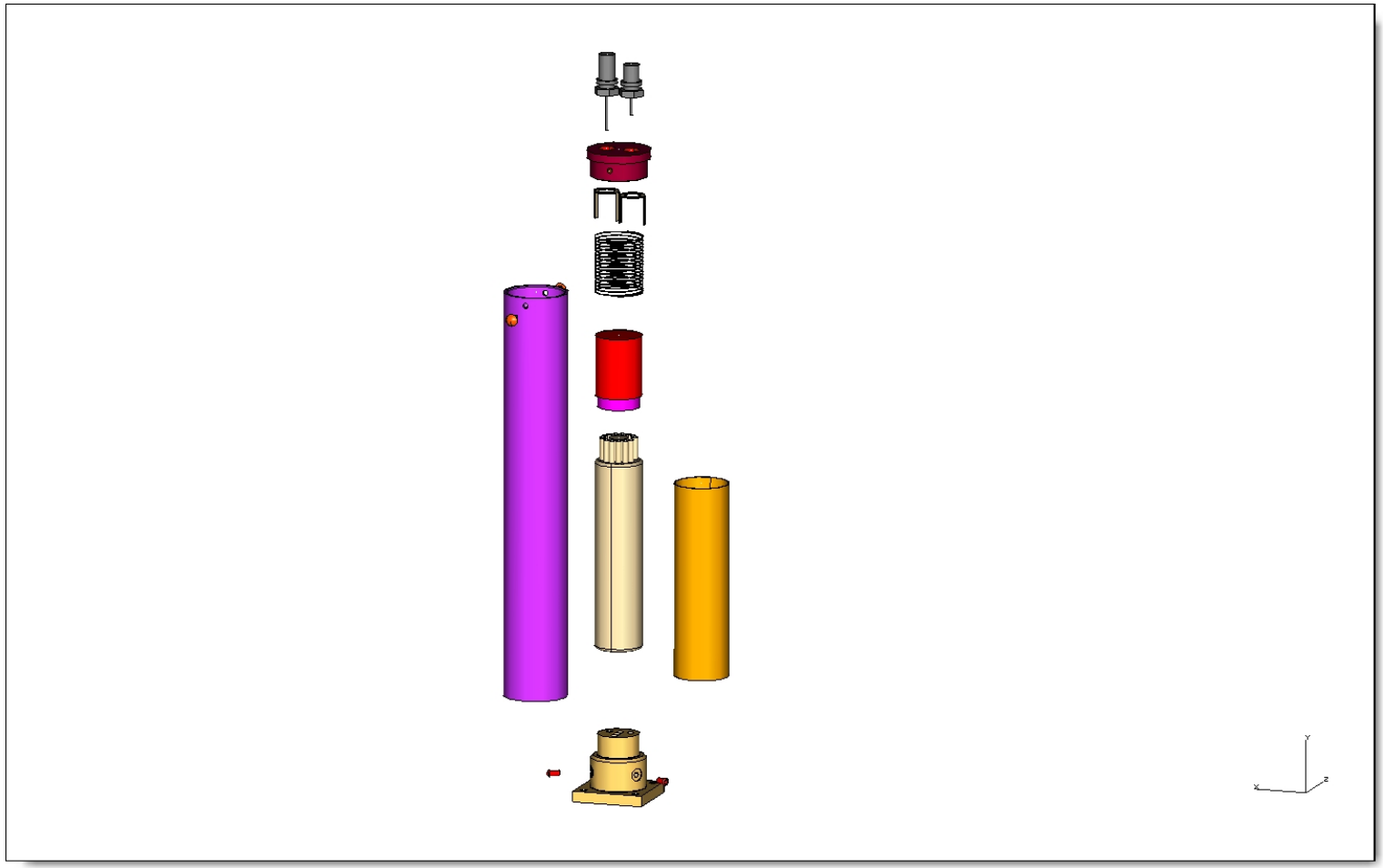
Outer Support Arms



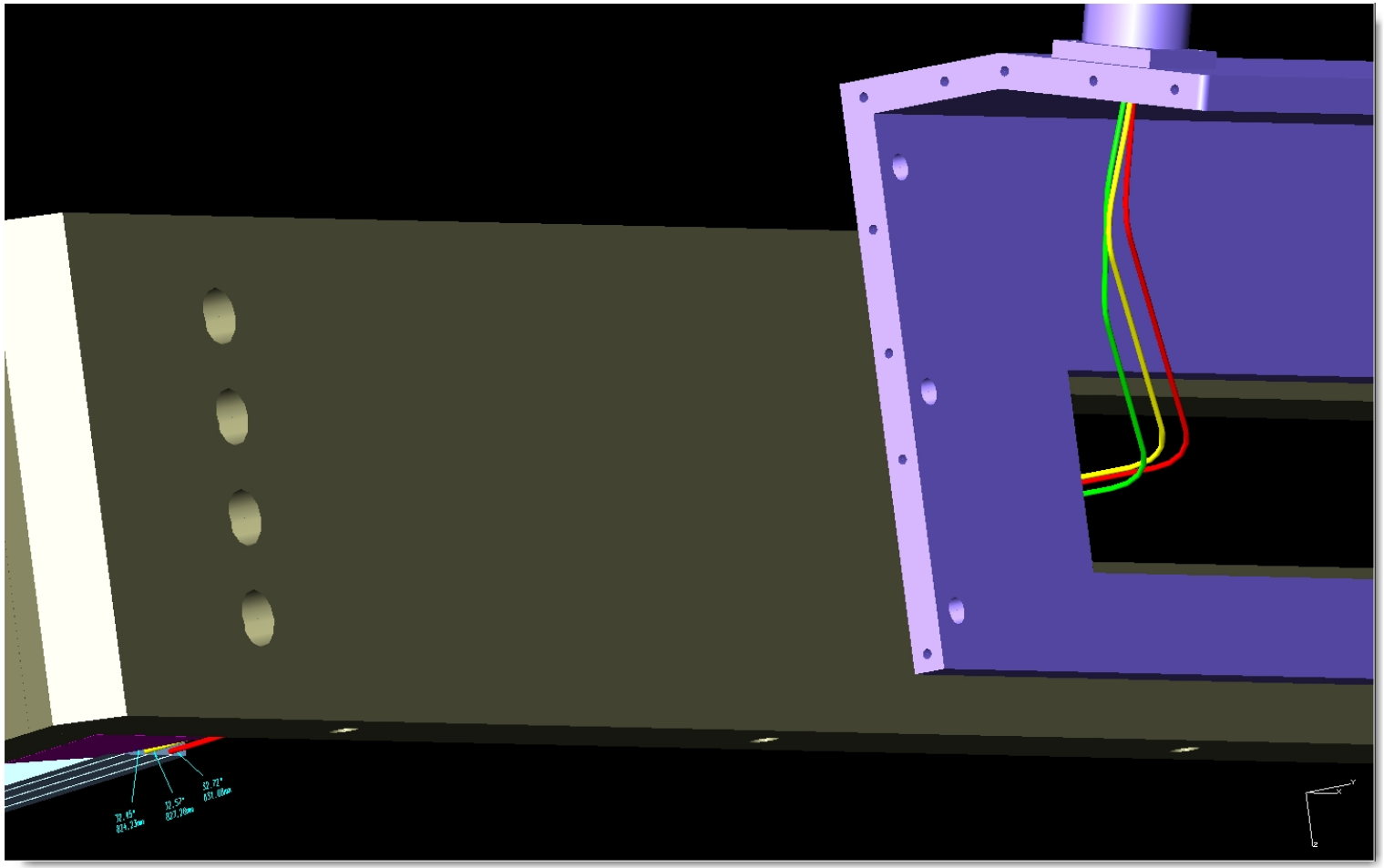
Nose Attachment



PMT and Housing



Fiber routing and PMT Mounting



What is left to do

- Simulations to prove W readout will work
- Simulations are also need to define final arrangement of readout segmentation for each U-V-W views
- Final modifications from size increase
- Analysis of supports
- Work out details of FTOF attachment to PCAL
- Detail drawings of all parts and assemblies

End