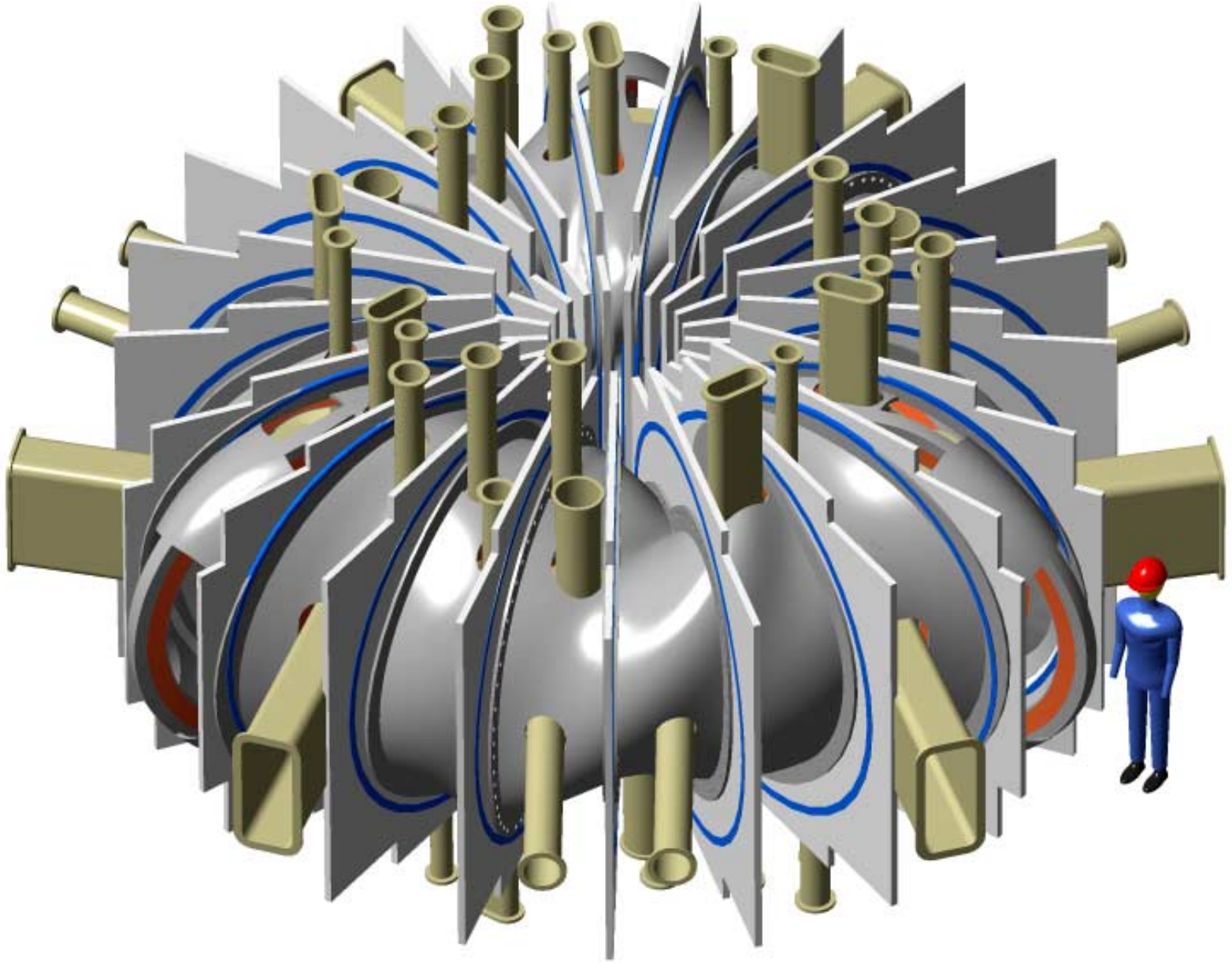
Status of Modular Coil and Structure Design

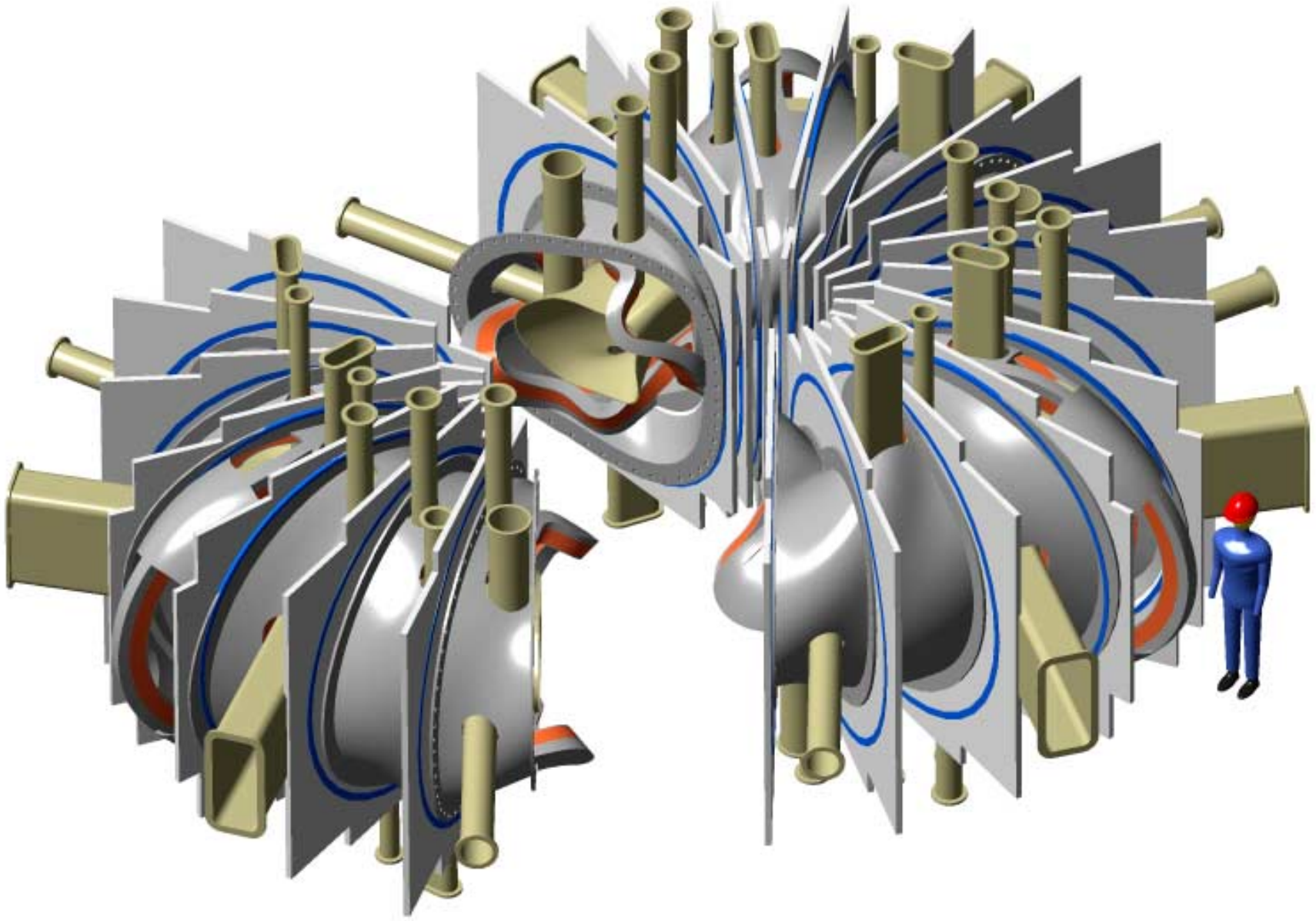
(Cole, Jones, Nelson, Williamson 11/28/00)

- Structural concept for Case 1017 is has been developed.
- Geometry models include I-beam, winding pack, structure that connects I-beam to shell (mohawk), structural shell with port cutouts, flanges.
- Mike is collecting the models for submission to Pro/INTRALINK.
- Method using .ibl files works for most models, but is not very robust.
- Greg is attempting to redefine each shell profile as a series of arcs; this should give better results when offsetting and cutting surfaces.
- Improved method will be applied to Case 1127b2, a set of 21 coils with symmetry on the v=1/2 (oblate) plane. The coils splitting the v=0 plane are also pulled out about 30-cm.

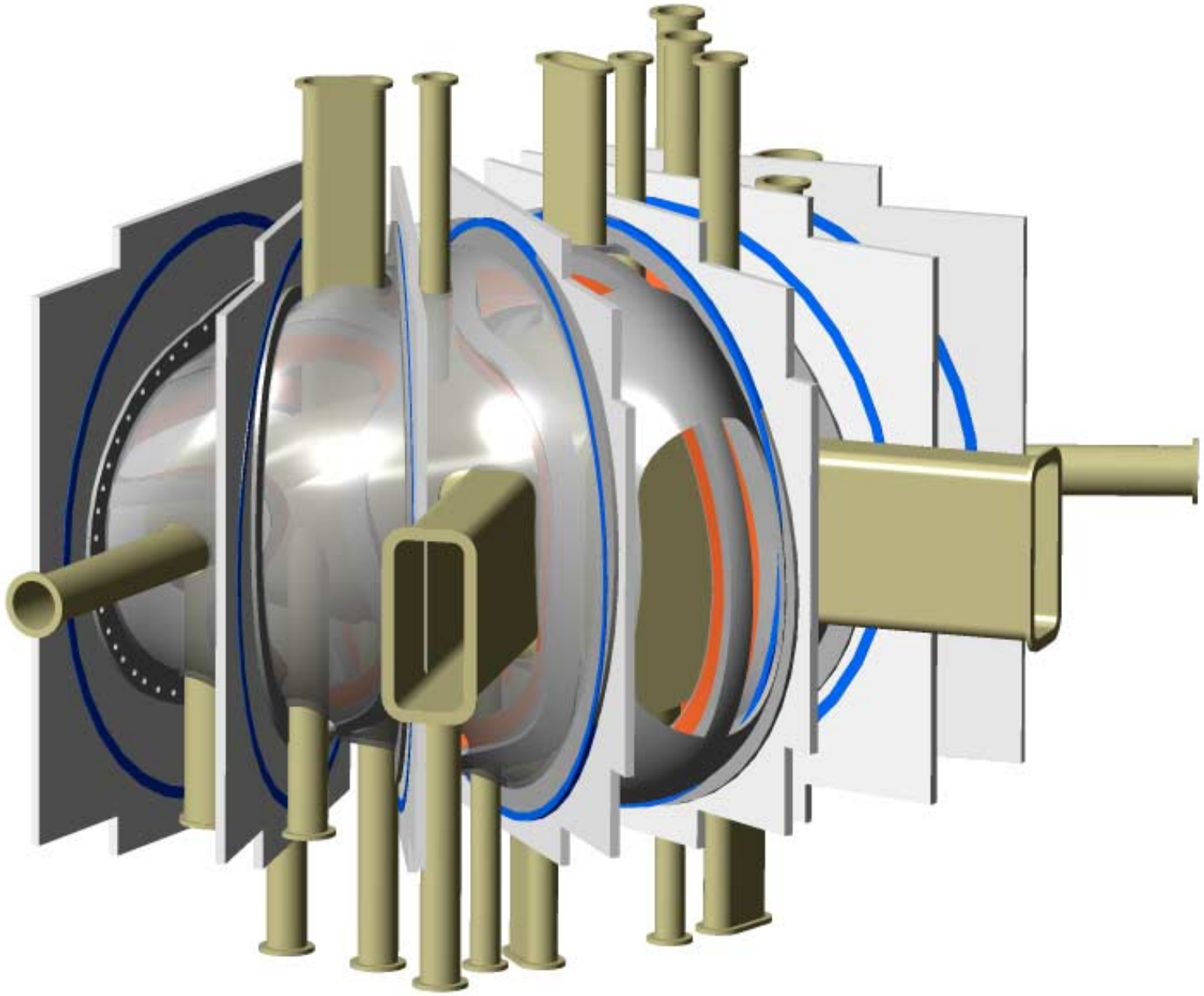
Modular Coils and Structure for Case 1017



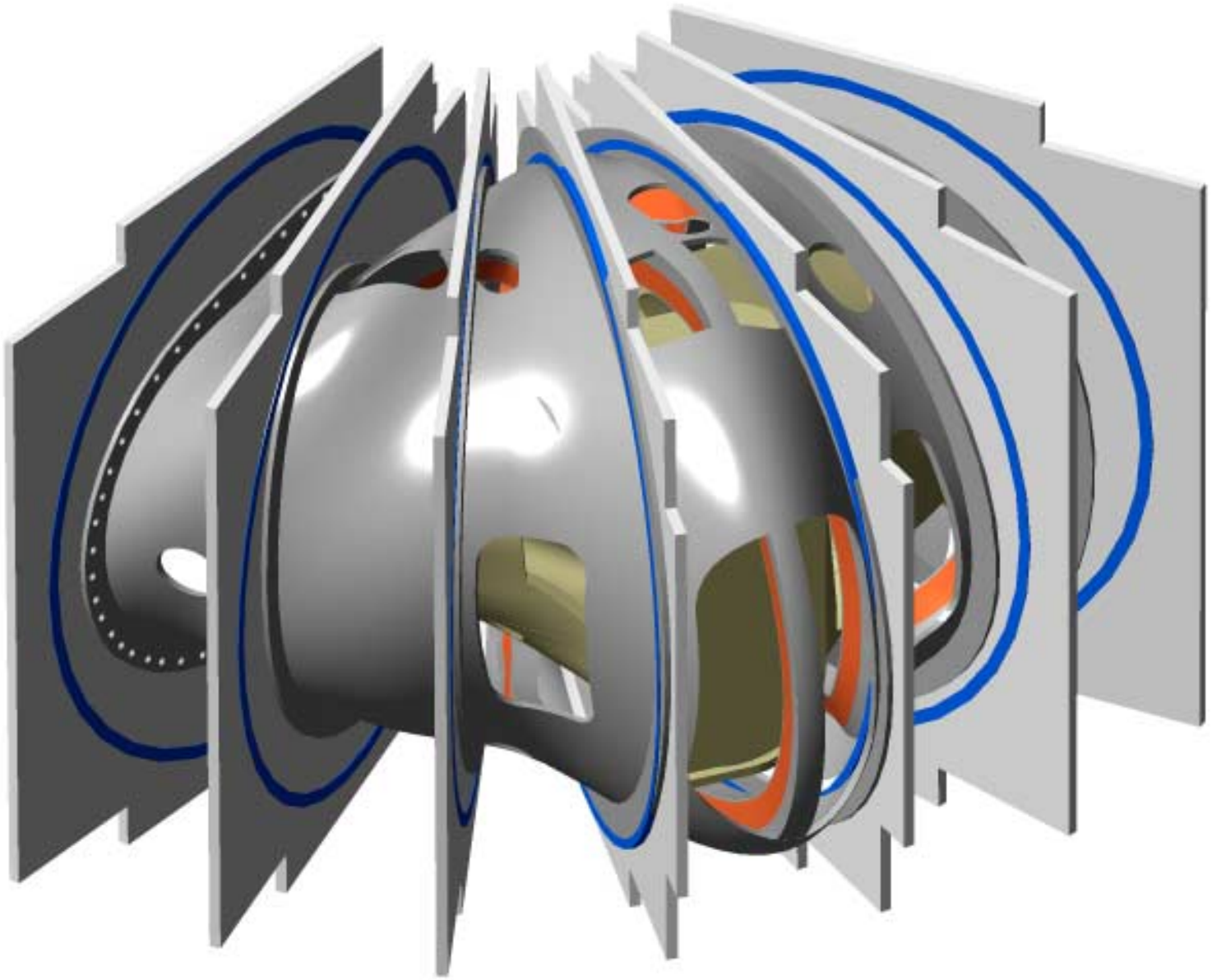
Field-Period Subassembly



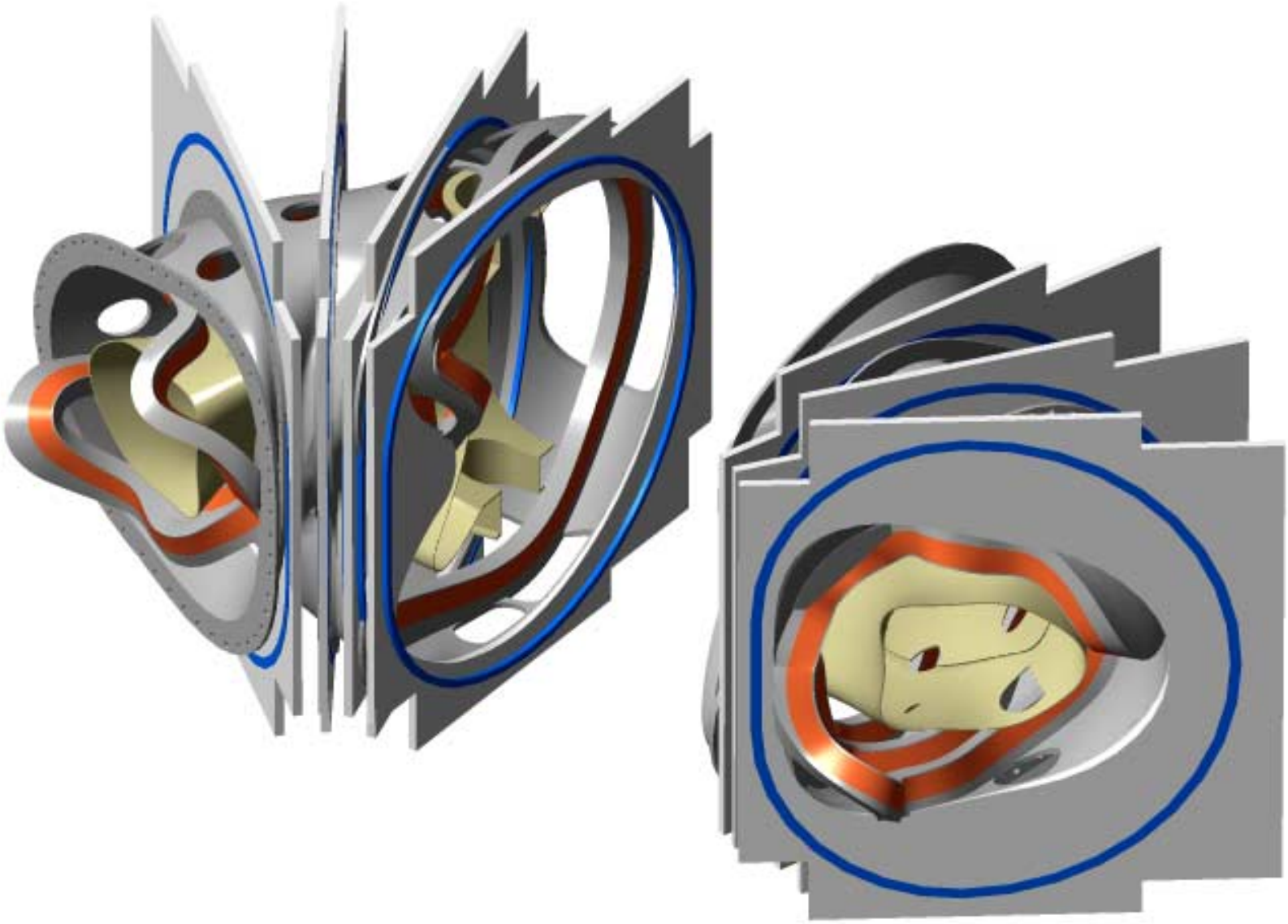
Field-Period Subassembly



Subassembly with Vacuum Vessel Ports Removed

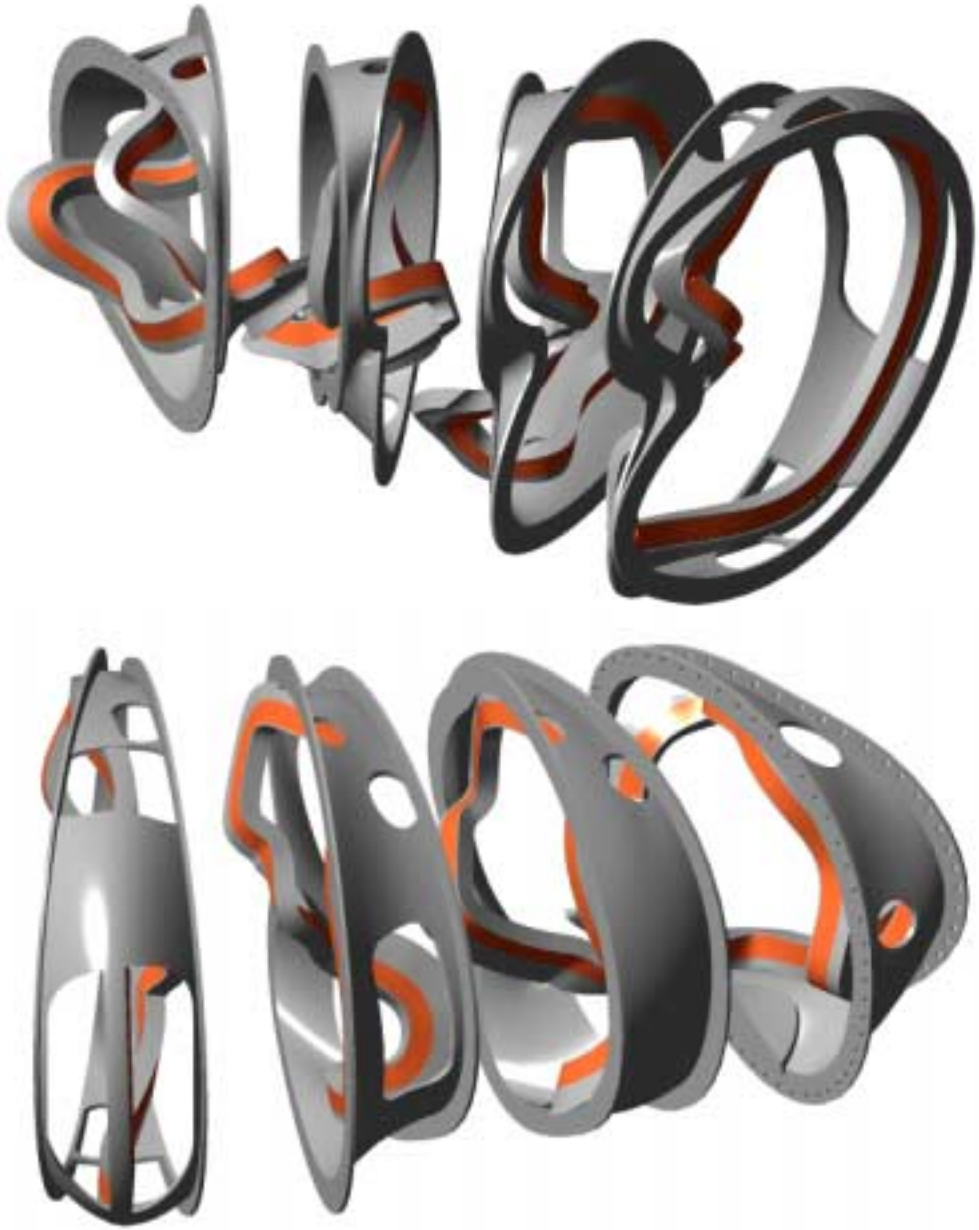


Half Field-Period Subassembly



Subassembly with Vacuum Vessel Removed

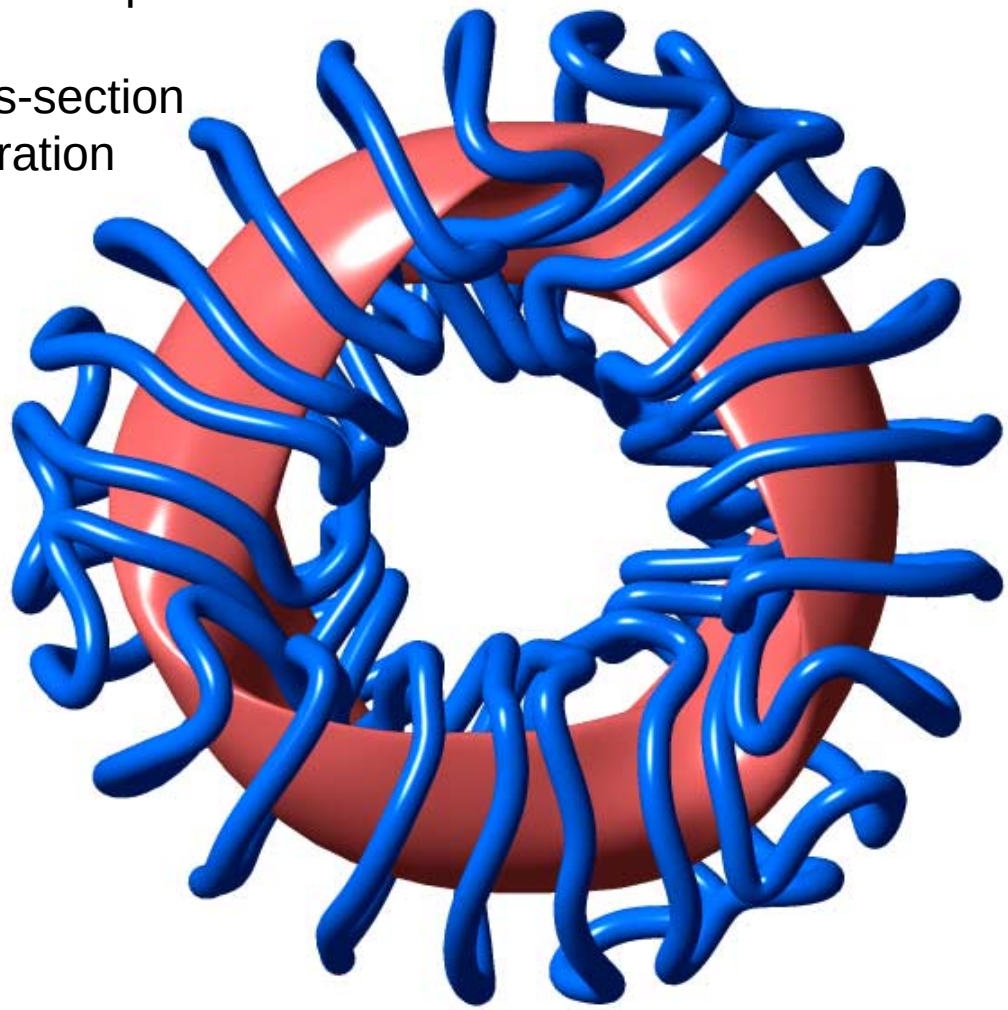
Individual Coil Castings



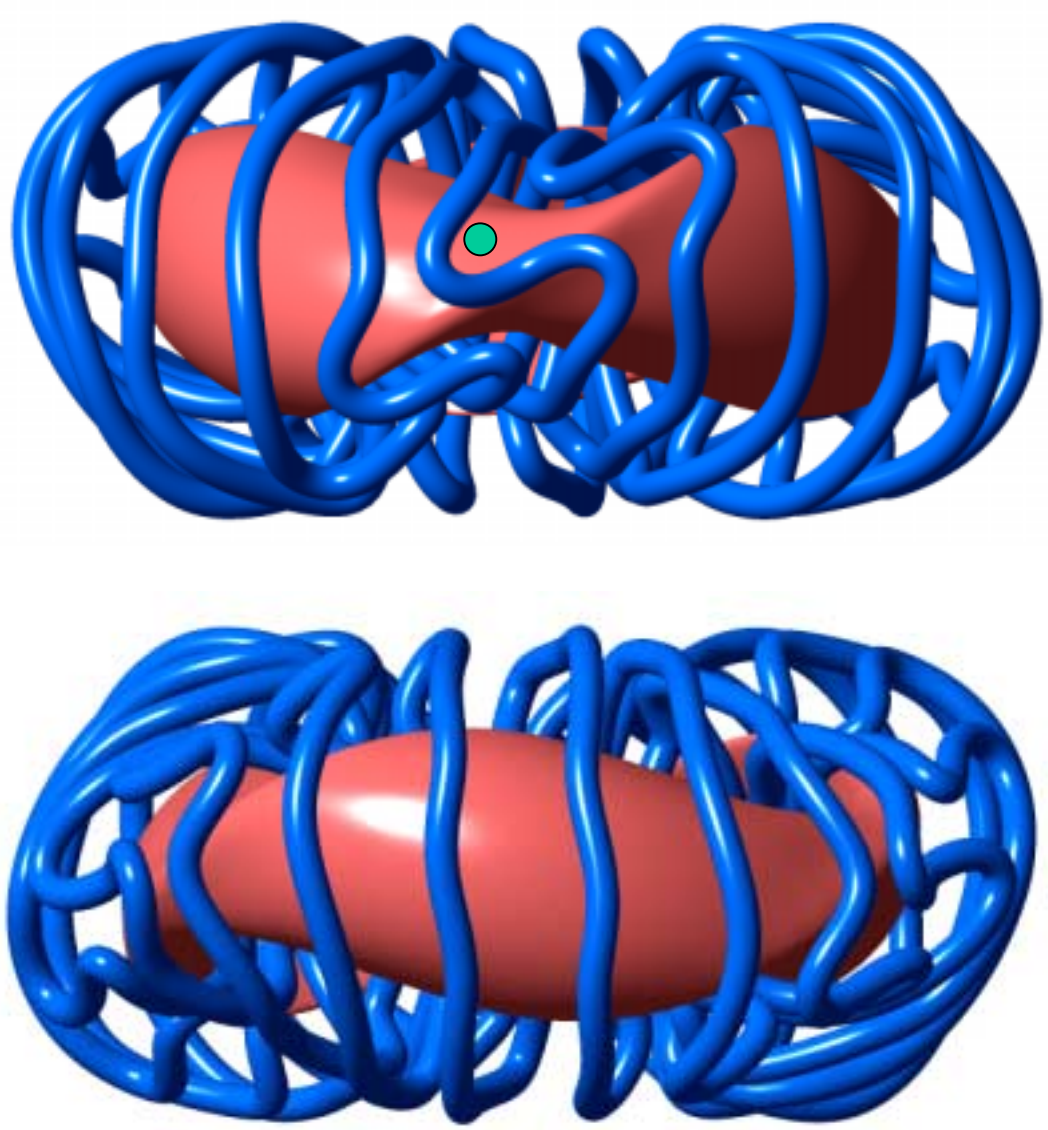
Modular Coil Geometry Update

Case 1115 -
21 coils, split on v=0 plane

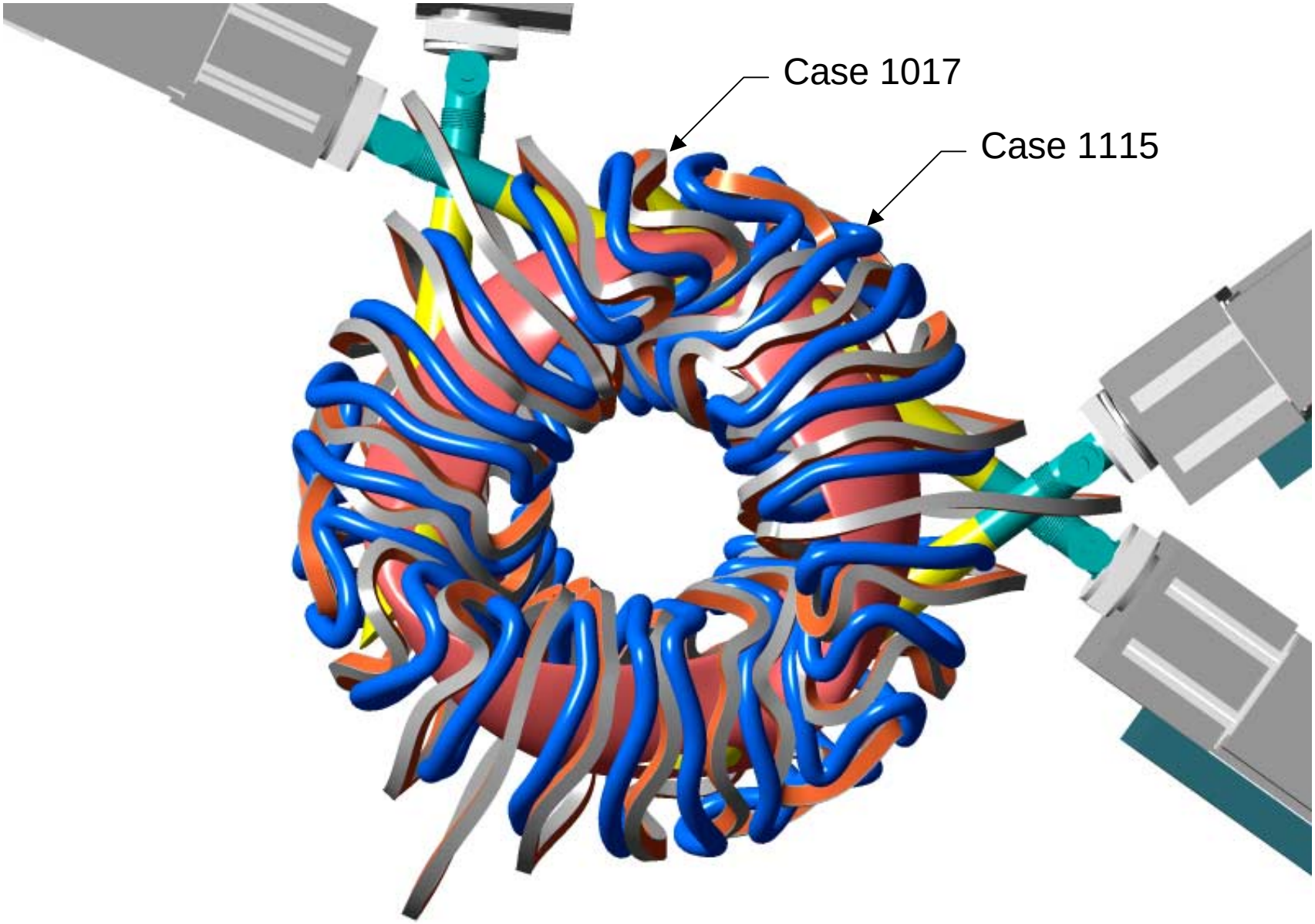
18-cm dia cross-section
shown for illustration



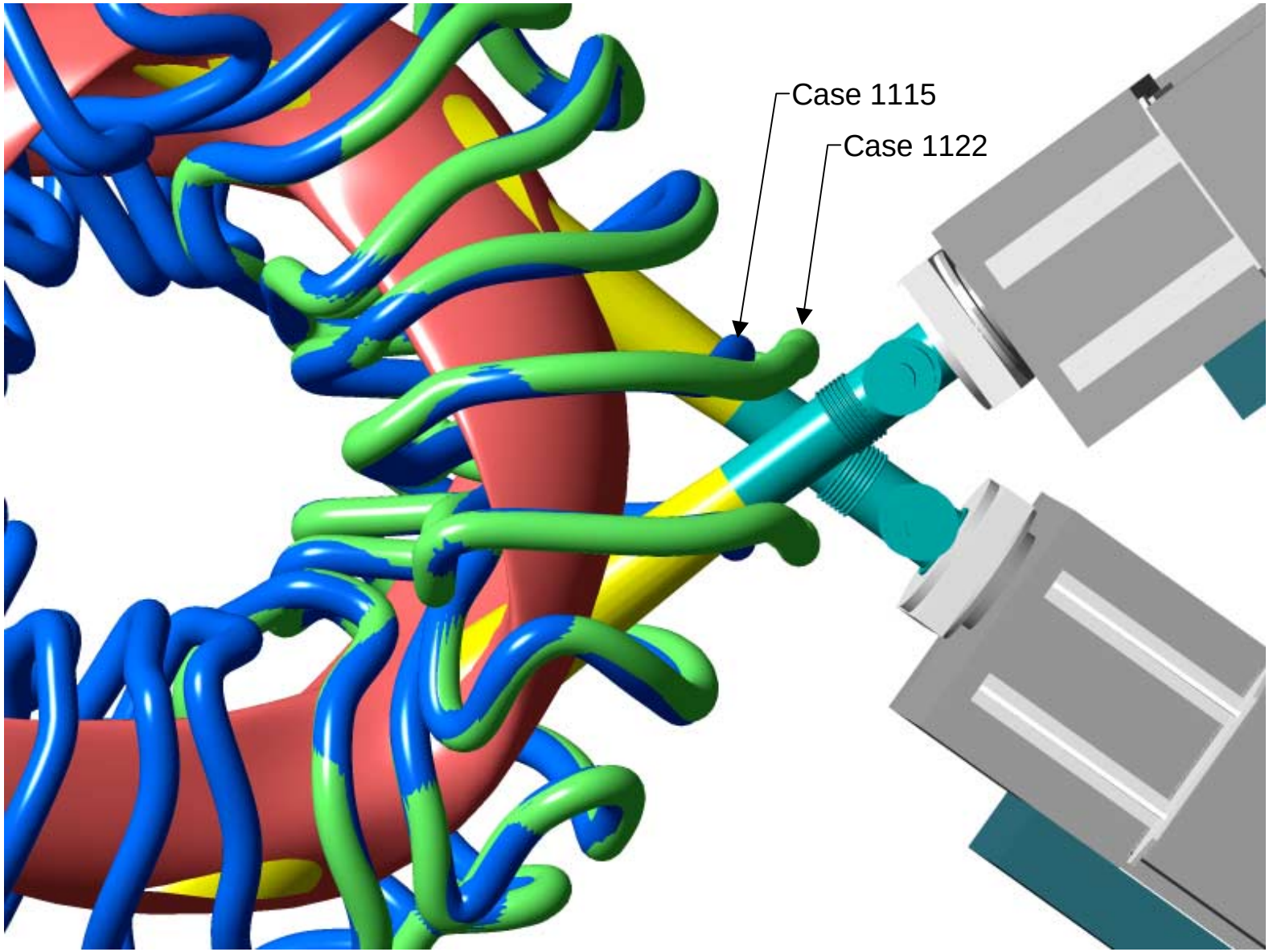
Elevation Views for Case 1115



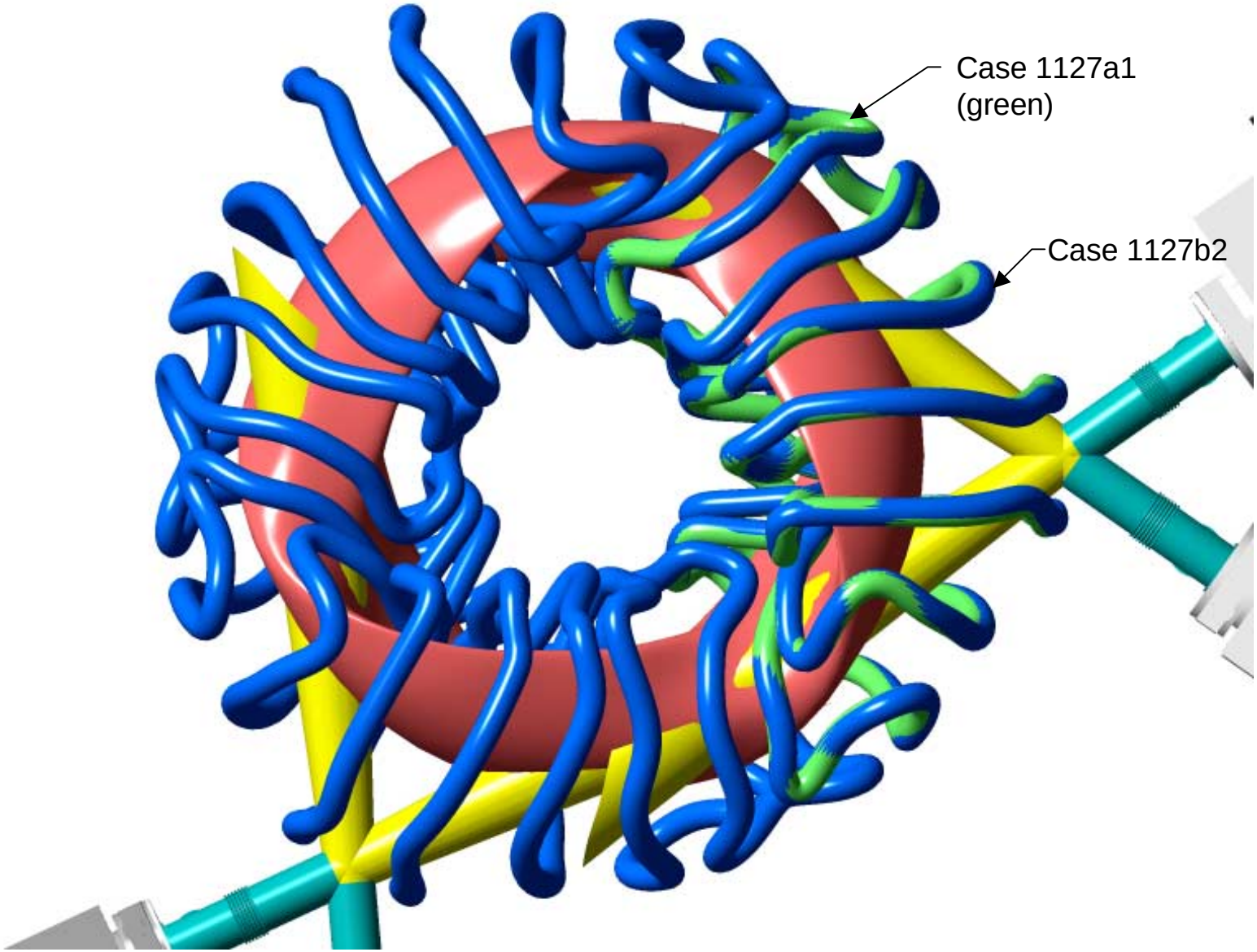
Plan View Showing Tilted Neutral Beams



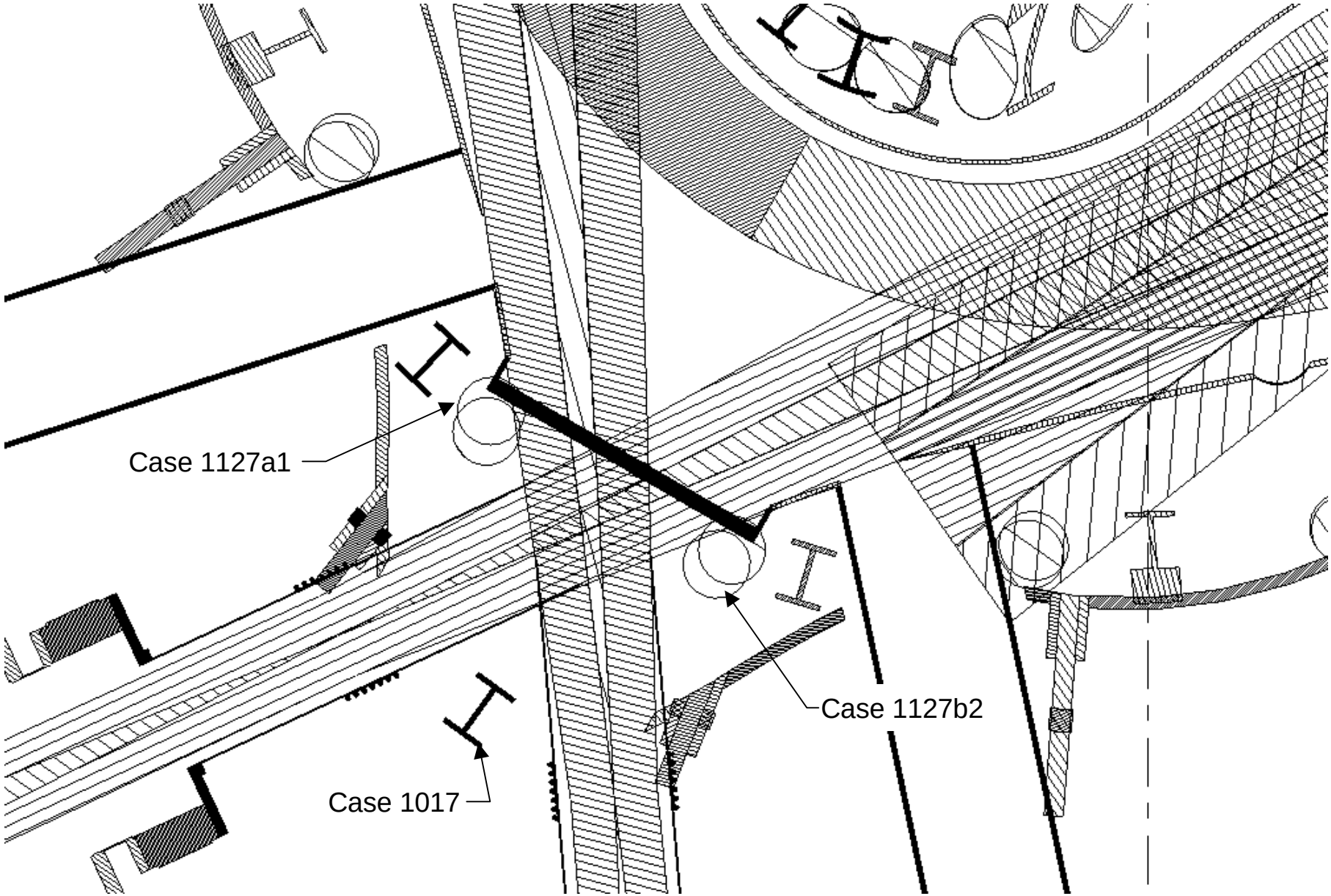
Coil #1 Modified to Improve Access



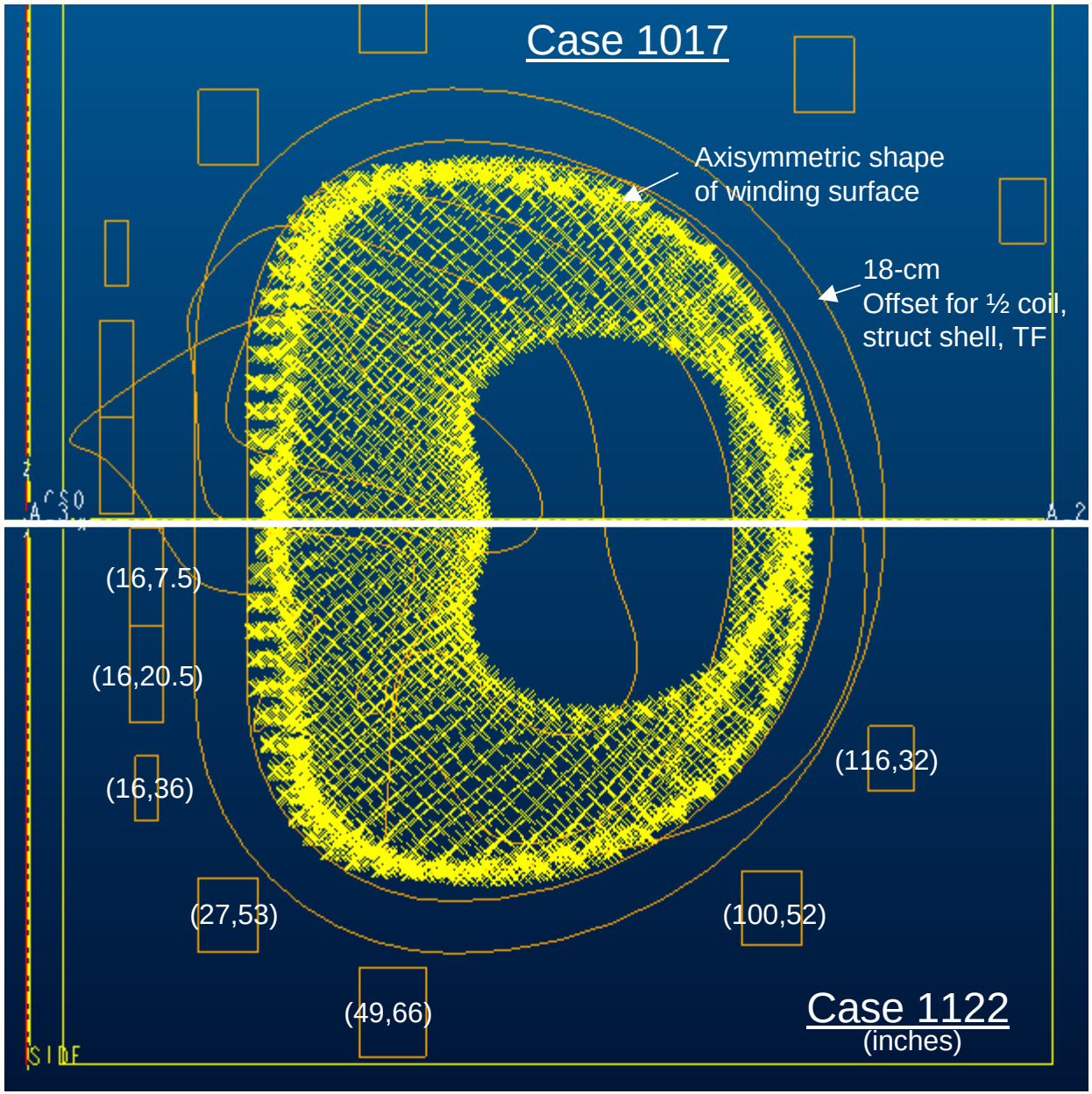
Coil #1 Modified and No Tilt for Neutral Beams



Plan View



Possible PF Coil Modifications



Conclusions

- Modular coil sets with v=1/2 symmetry have some advantages:
  - Single highly shaped coil at oblate cross-section
  - Smaller perturbation of coils for NB access
  - Outer PF coils can be closer to plasma

- Need a method of increasing toroidal spacing at v=0 plane