Tracking Configuration Update

Work by many: Elke, Ernst, Matt, Roland, Rolf, …

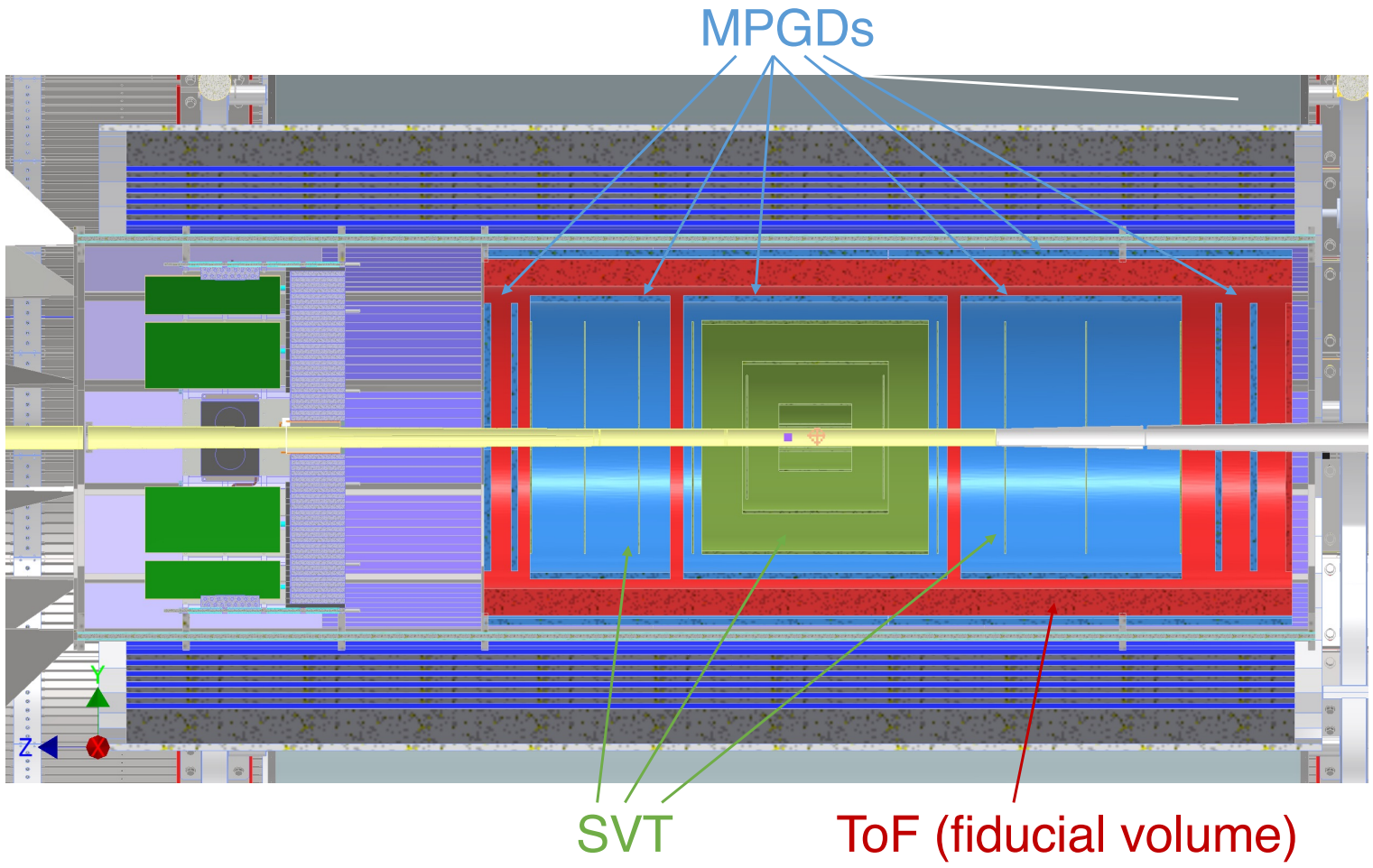
- Past ePIC tracking subsystem changes in a nutshell:
  - SVT barrel redone to achieve YR resolutions,
  - SVT forward disk array reconfigured to achieve YR resolutions,
  - SVT backward disk array extended to increase acceptance and optimize resolutions,
  - Innermost imaging layer of the BEMC adds a track point behind the DIRC

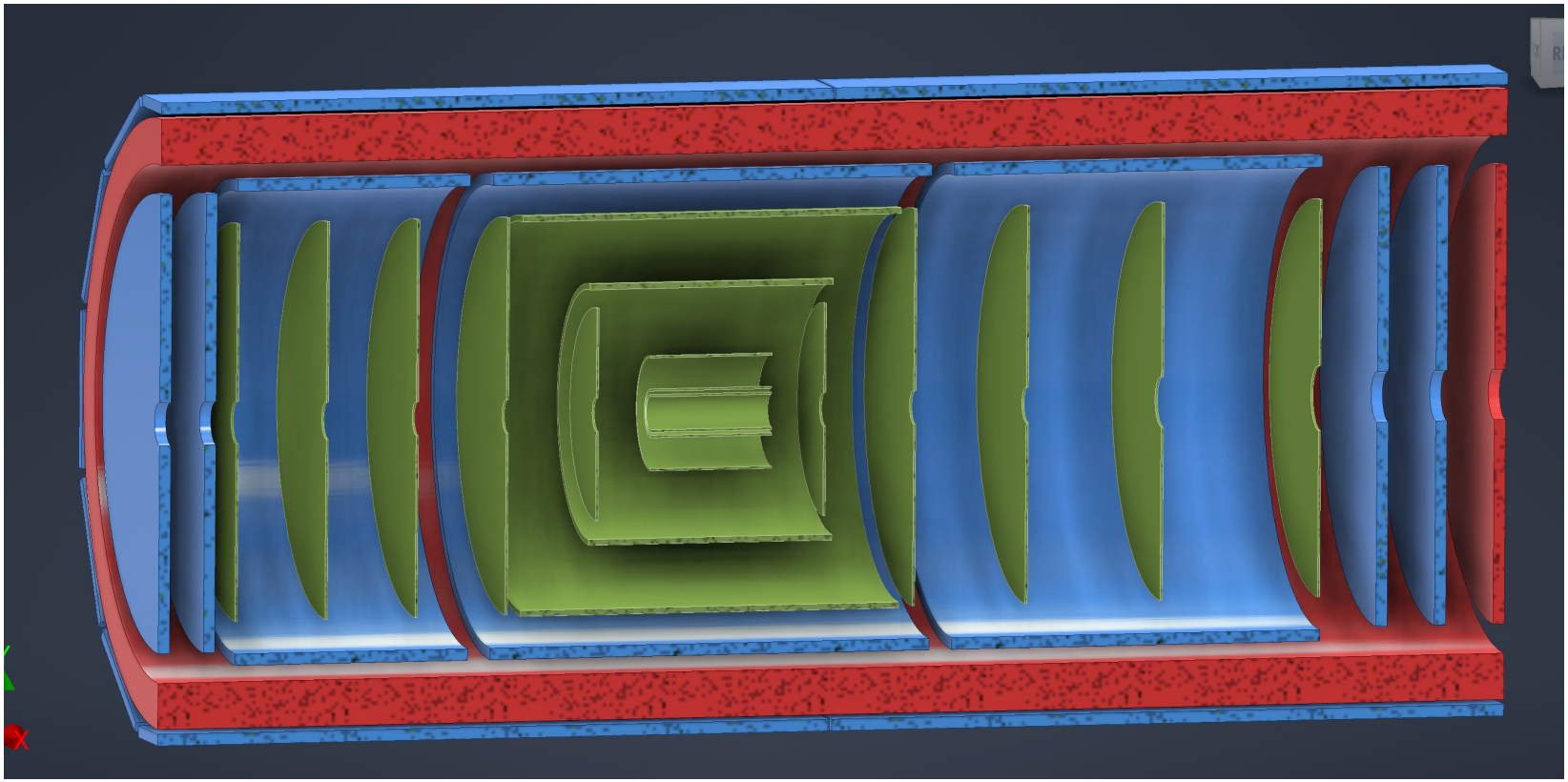
- Timely to converge on an MPGD configuration. Its primary roles are to:
  - Provide additional fast points for pattern recognition,
  - Aid tracking into the PID subsystems,

- The MPGD configuration concept discussed here builds on the discussion of two possibilities past May 11th – c.f. https://indico.bnl.gov/event/19481/ – and factors in constraints and further considerations. Its main characteristics include a barrel split by backward, central, and forward acceptance regions and disks that can form tracklets (not just points). Next slides present a walk-through.

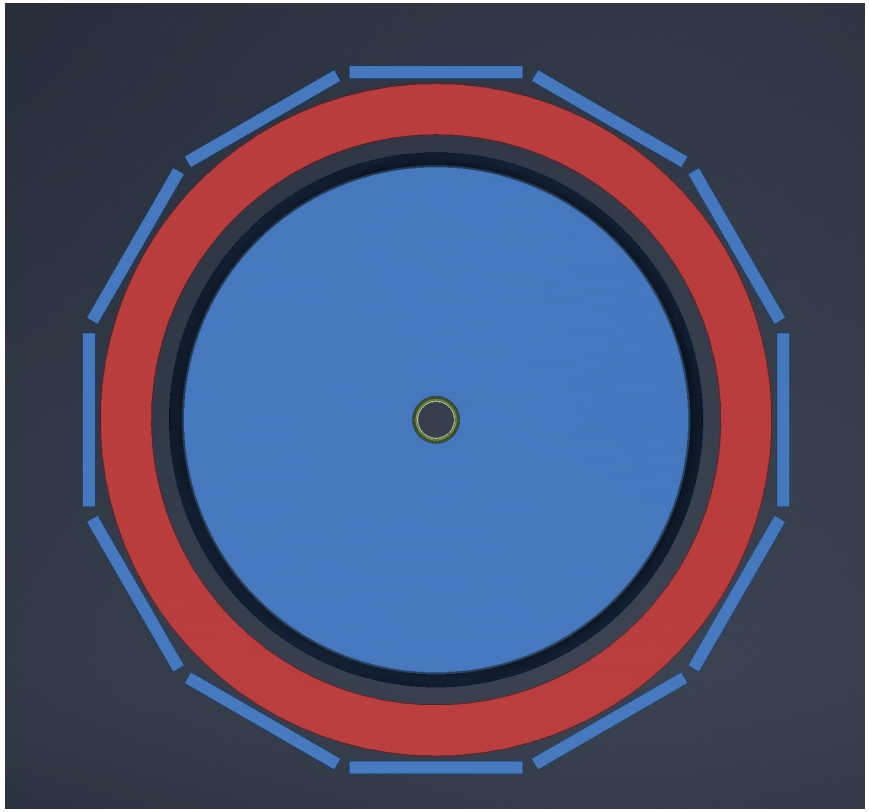
- The ToF and SVT subsystems are unchanged, except for the two most backward disks. Those are moved inwards by several cm to accommodate the added MPGD disks.

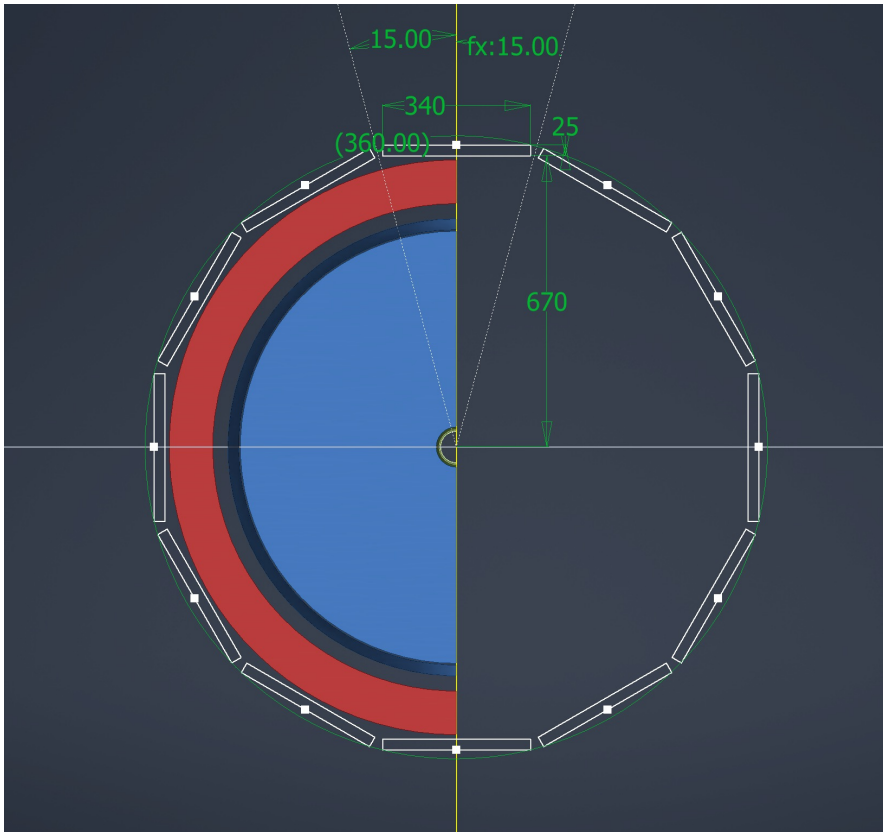
- The goal is a finalized implementation for the July simulation campaign.


MPGDs
SVT
ToF (fiducial volume)
Y
Z

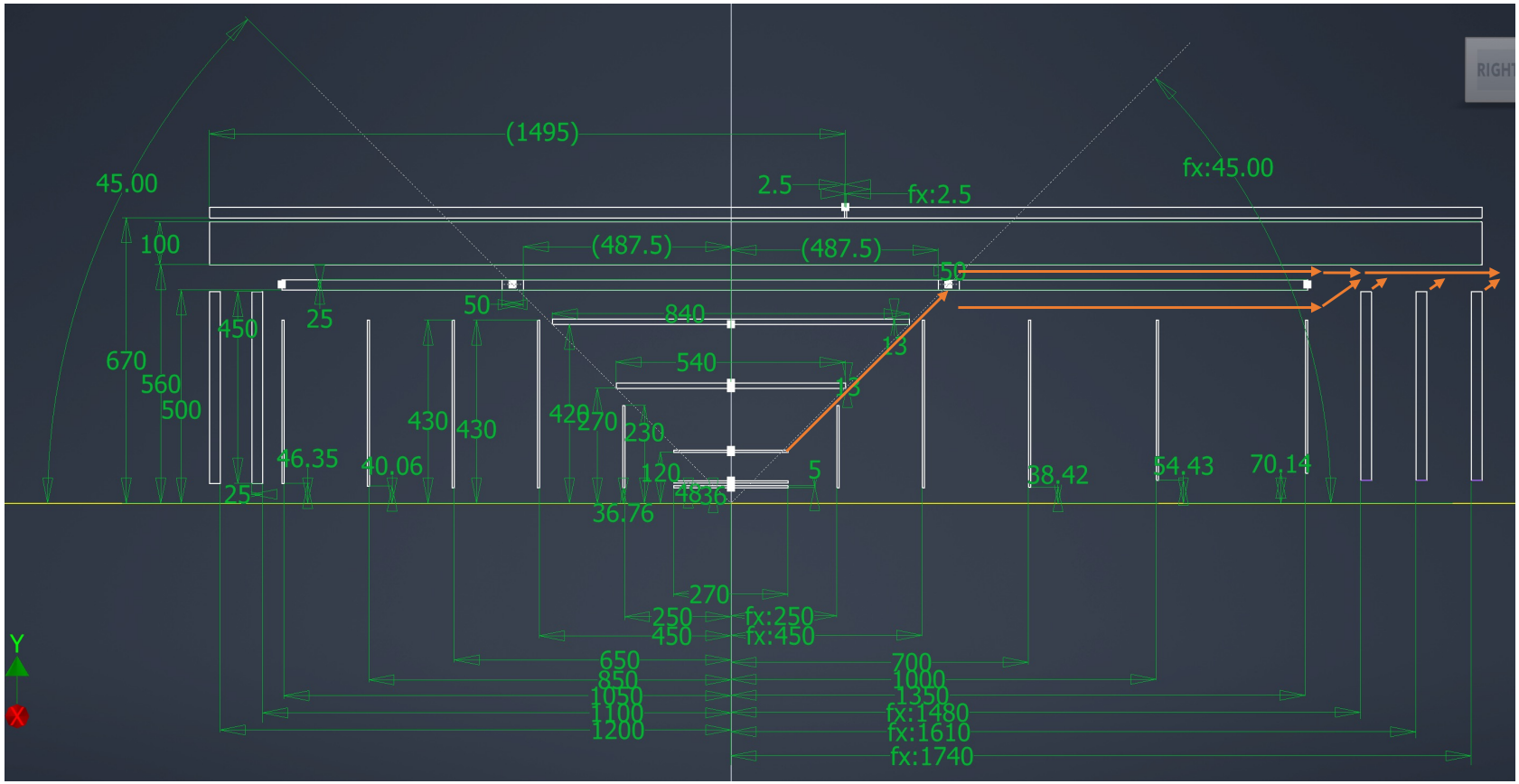


SVT MPGDs ToF (fiducial volume)




15.00
fx:15.00
340
(360.00)
25
670

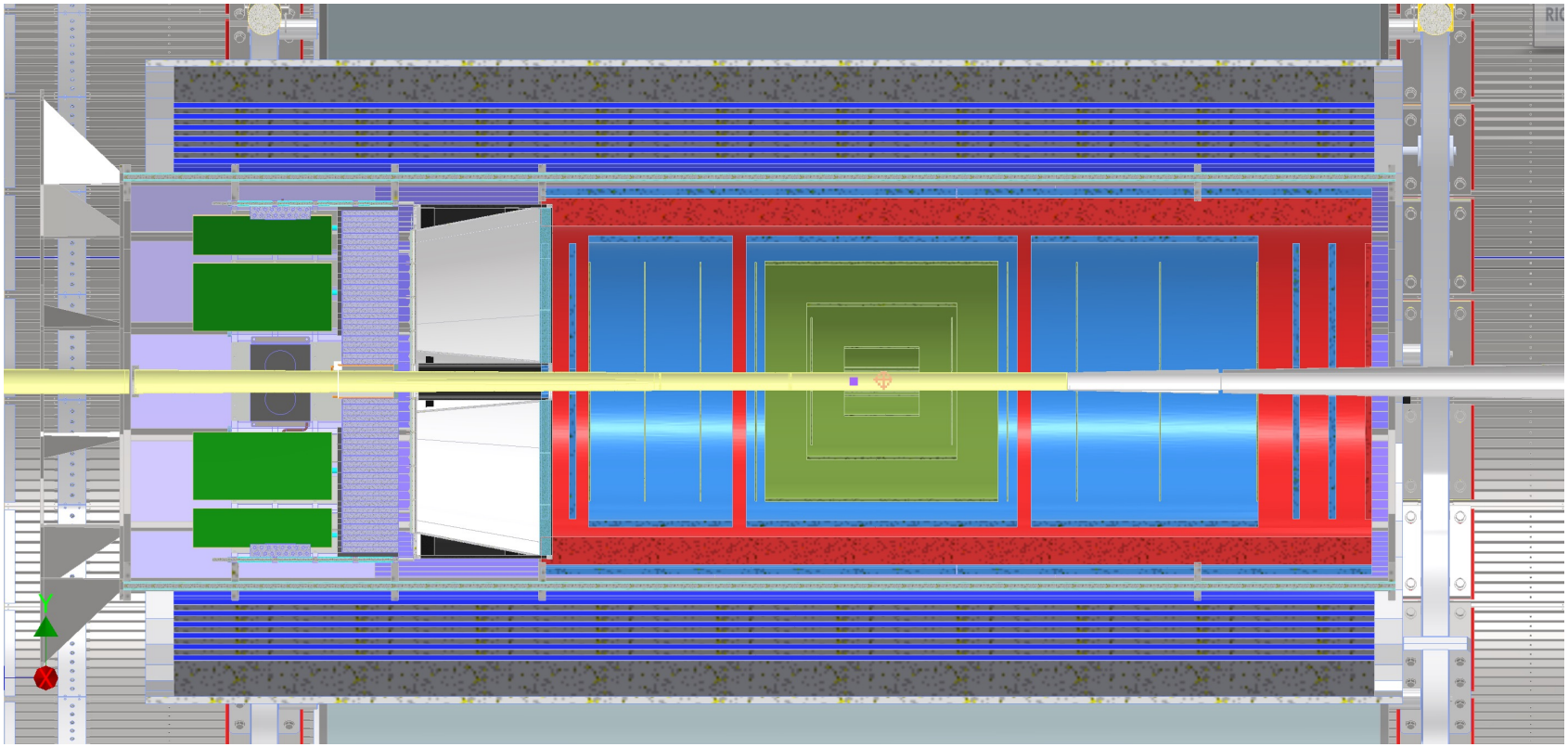
Service routing (shown only for the hadron-going direction):

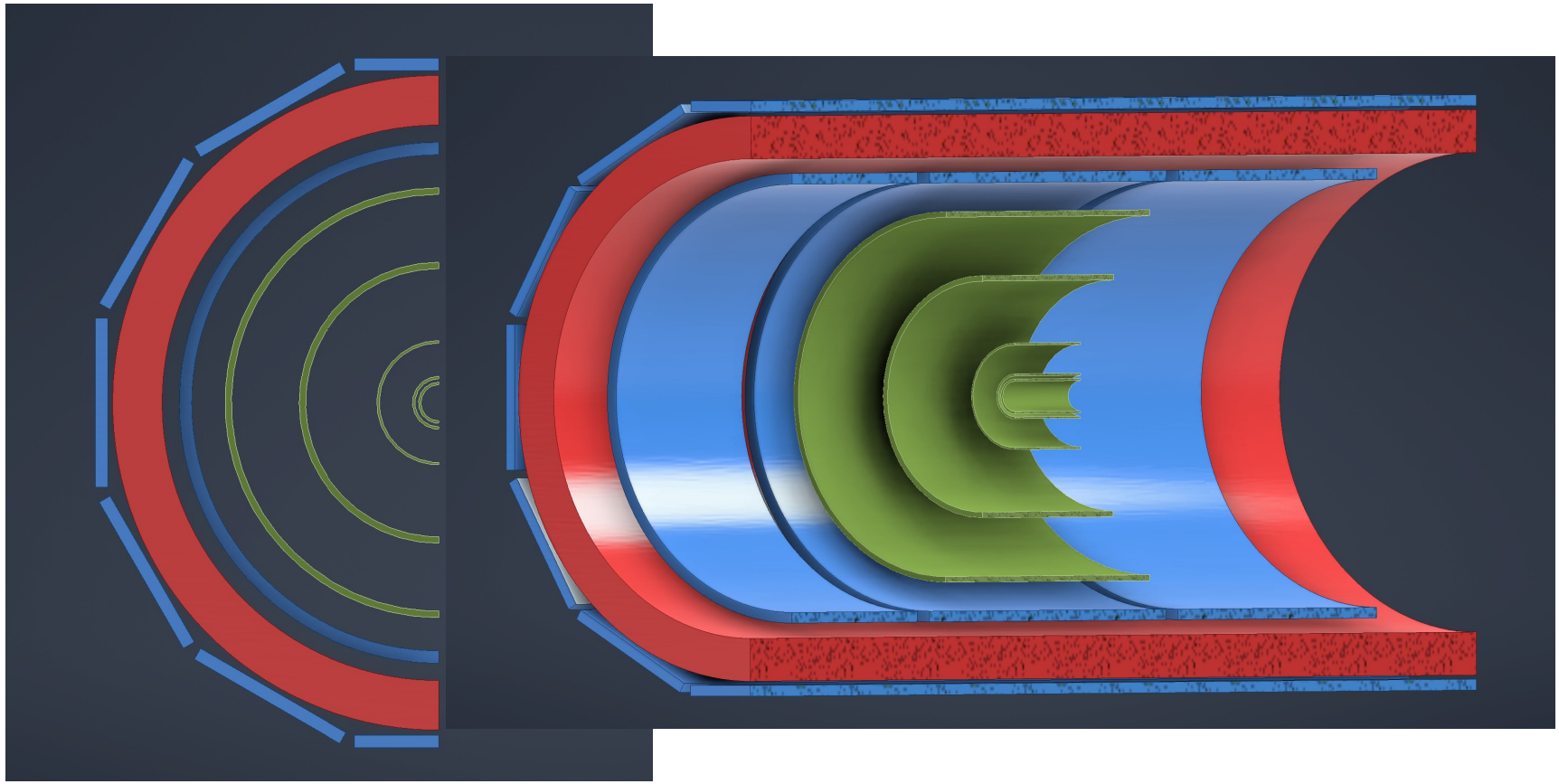


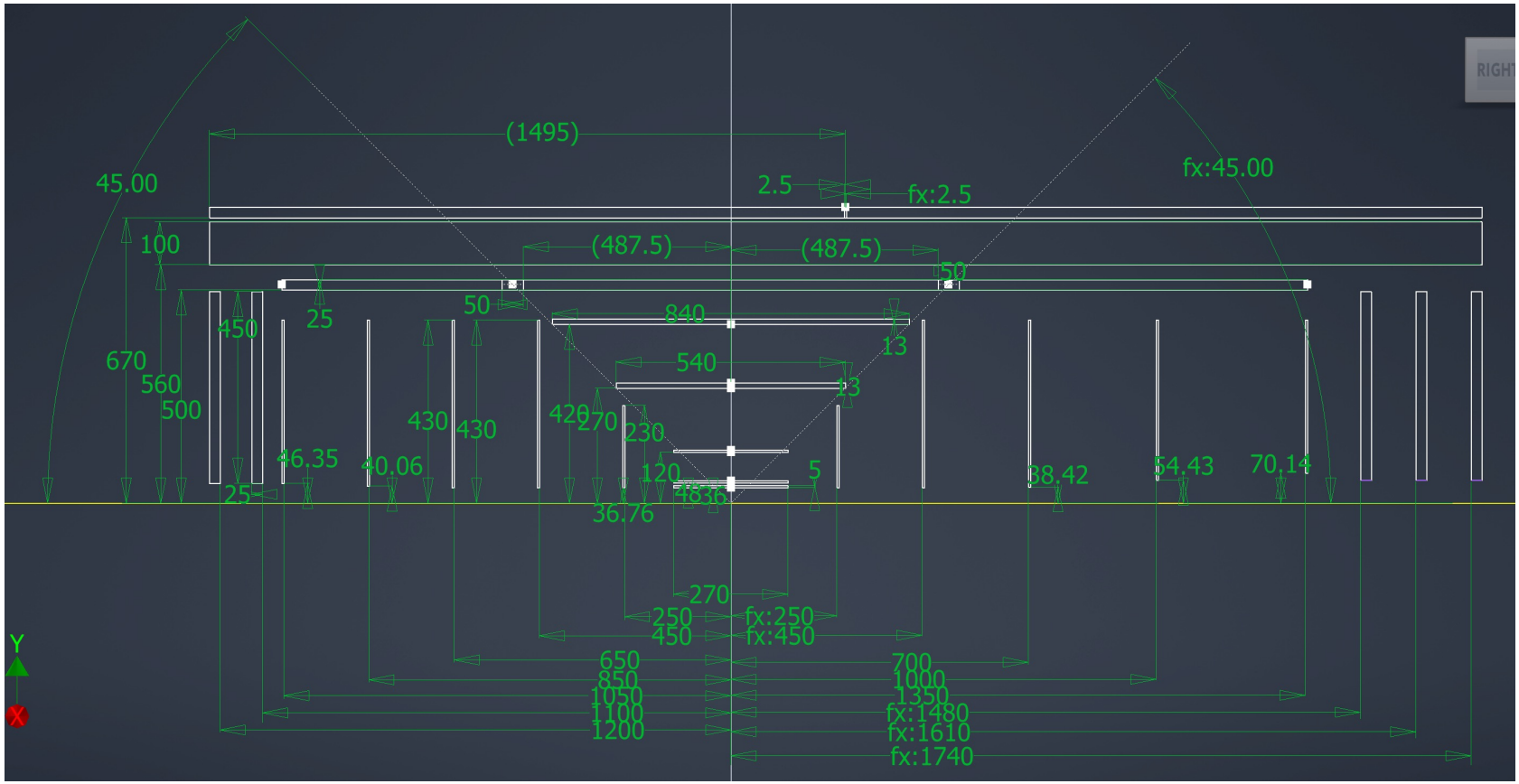
- Next steps:
  - Finalize envelopes of pfRICH and backward tracker – ongoing,
  - Service estimates for MPGDs – DSC,
  - Geometry implementation in simulations – ongoing,
  - Material maps –
  - ACTS –
  - Tests

- Goal: readiness for code-freeze first Monday in July and July simulation campaign.

- Note: ongoing work – thank you Nicolas – to quantify angular and position resolutions into the PID subsystems in preparation for the upcoming review precedes this geometry revision and make use of the Brycecanyon geometry (and truth seeding).



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fx:2.5
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100
(487.5)
(487.5)
50
50
25
840
450
13
670
560
500
540
13
430
430
420
270
230
46.35
40.06
120
5
38.42
54.43
70.14
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fx:250
450
fx:450
650
700
850
1000
1050
1350
1100
fx:1480
1200
fx:1610
fx:1740
Y
X