



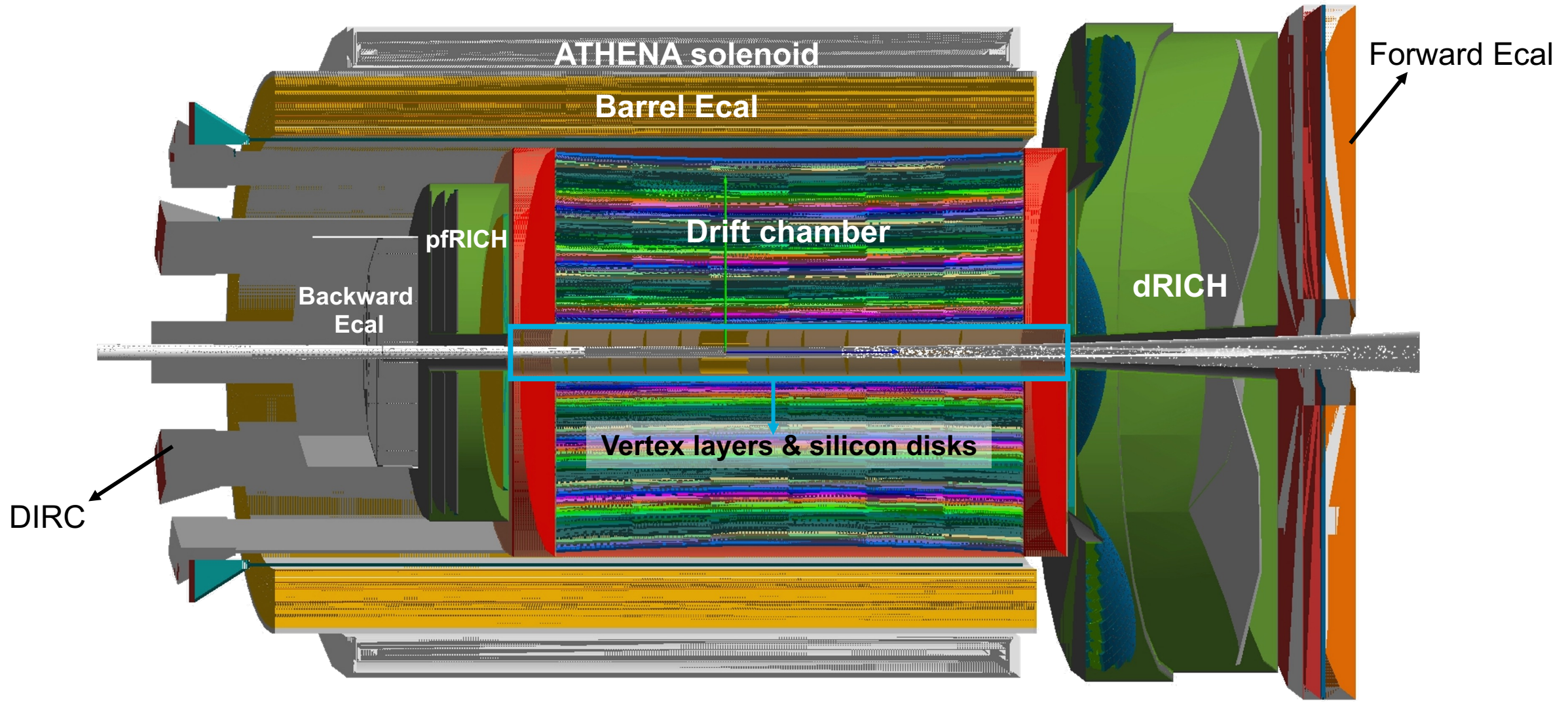
Drift Chamber Implementation in DD4hep

Cheuk-Ping Wong

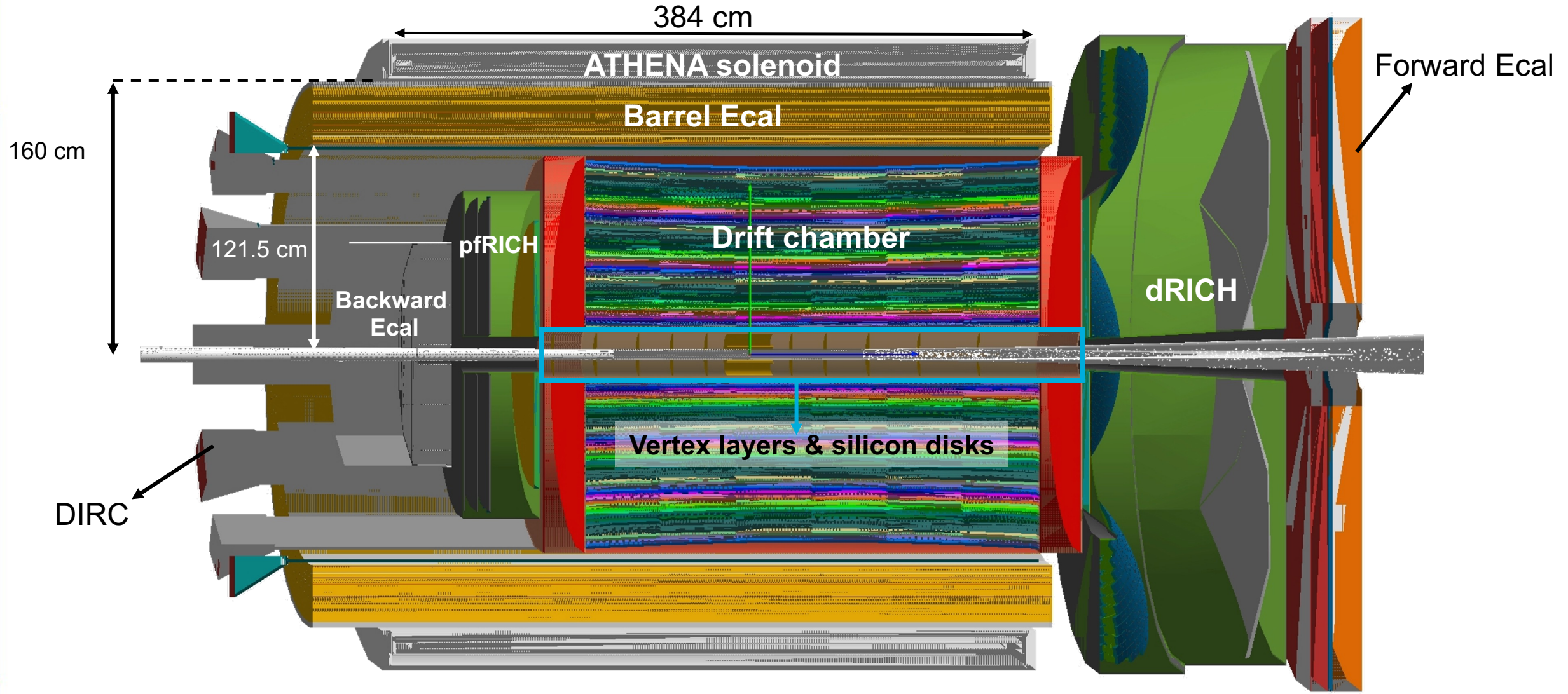
07-15-2024



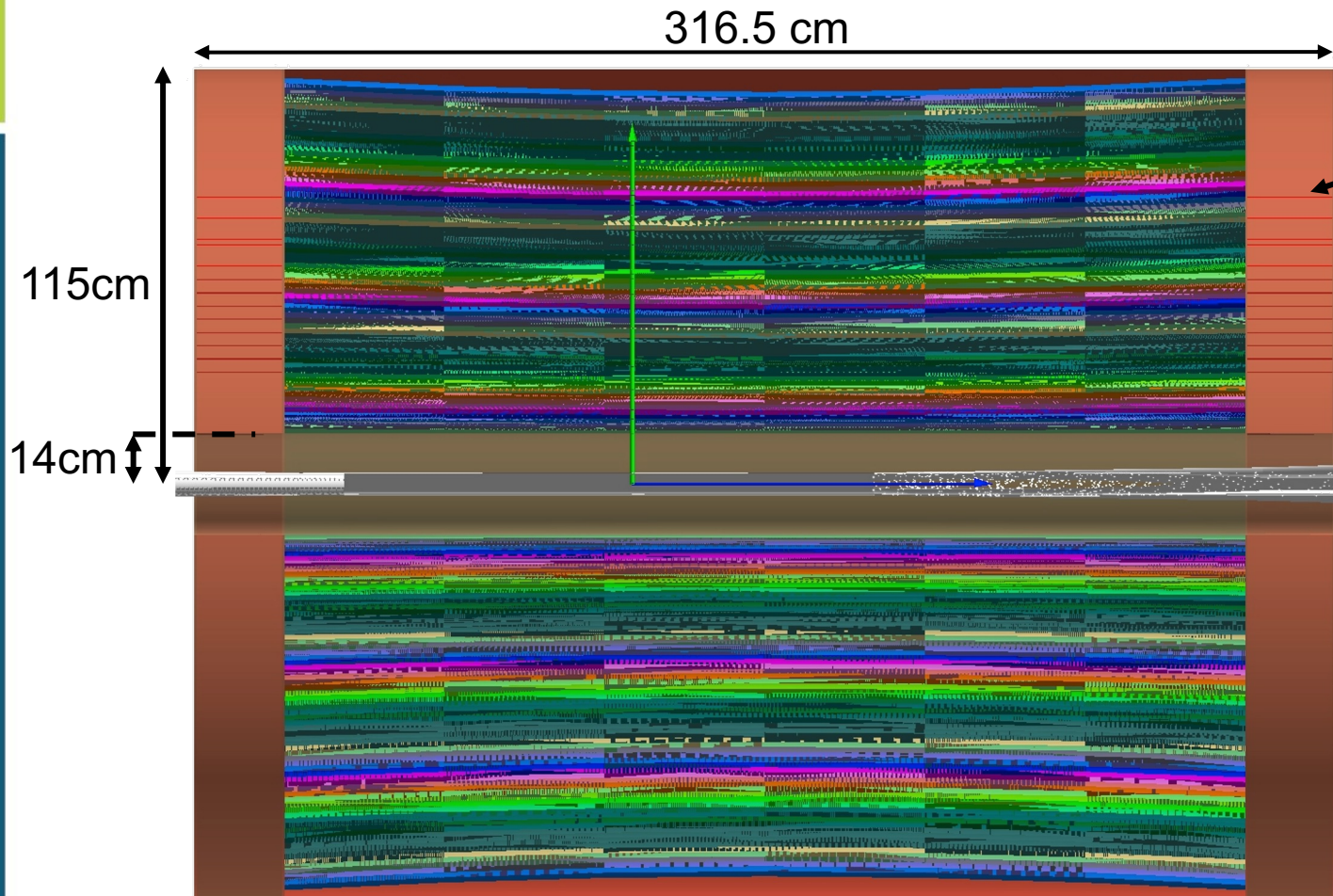
Integrated Detector Design (Except Hcal/MuID)



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Drift Chamber



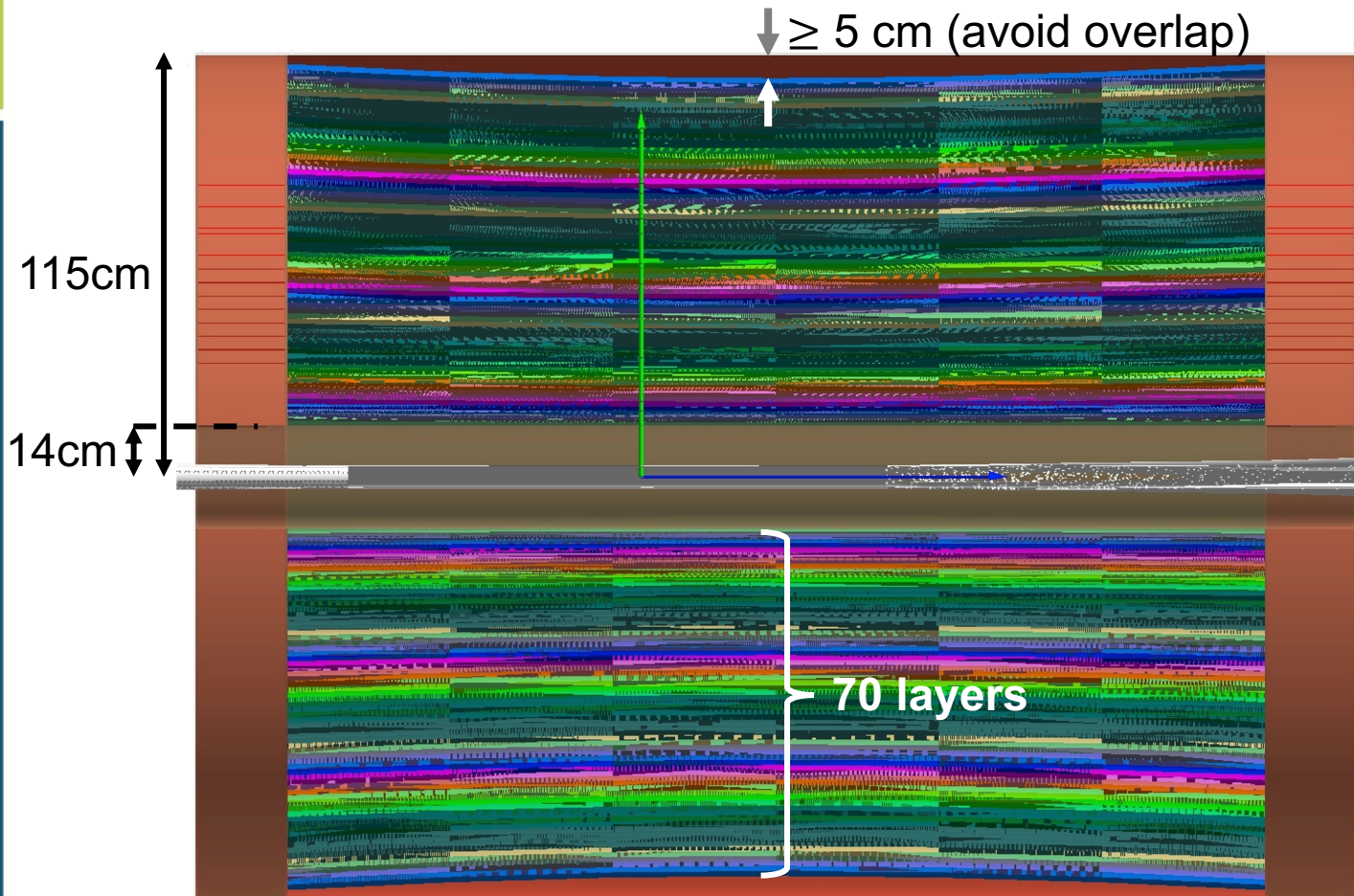
Cylindrical vessel

- barrel: carbon fiber (1cm thick)
- endcap: Polystyrene Foam

– gas:

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<fraction n="0.510303092386095" ref="C"/>
```

Drift Chamber



- Each (hyperboloid) layer contains
 - Sense wires: $d=34$ μm , **carbon fiber** (no coating right now)
 - Field wires: $d=40.3$ μm / 50.3 μm , **copper**
 - See slide 26 in https://indico.bnl.gov/event/22856/contributions/89610/attachments/53653/91796/BNL-Mechanics_ajung_March2024.pdf and NIM A 855 (2017) 154
- 10 super layers. Each super layer contains max. of 7 layers
- Number of cells (sense + field wires) per layer: 96 - 480 cells
- $10.7 < r_{n+1}^{out} - r_n^{out} < 14.2$ mm
Determined by the inner radius of the vessel (14cm), number of cells in the inner most layer and number of super layer

Summary

- Integrated detector design implemented in DD4hep
 - Except Muon ID
 - Working on making the backward Ecal and pfRICH larger in radius
- Contacted Corentin Allaire, ACTS expert, on including drift chamber in track reconstruction last week
 - Meanwhile, I am going to ask around whether GENFIT is available in DDhep