

Weekly DUNE SP Detector Integration Engineering Meeting Slides

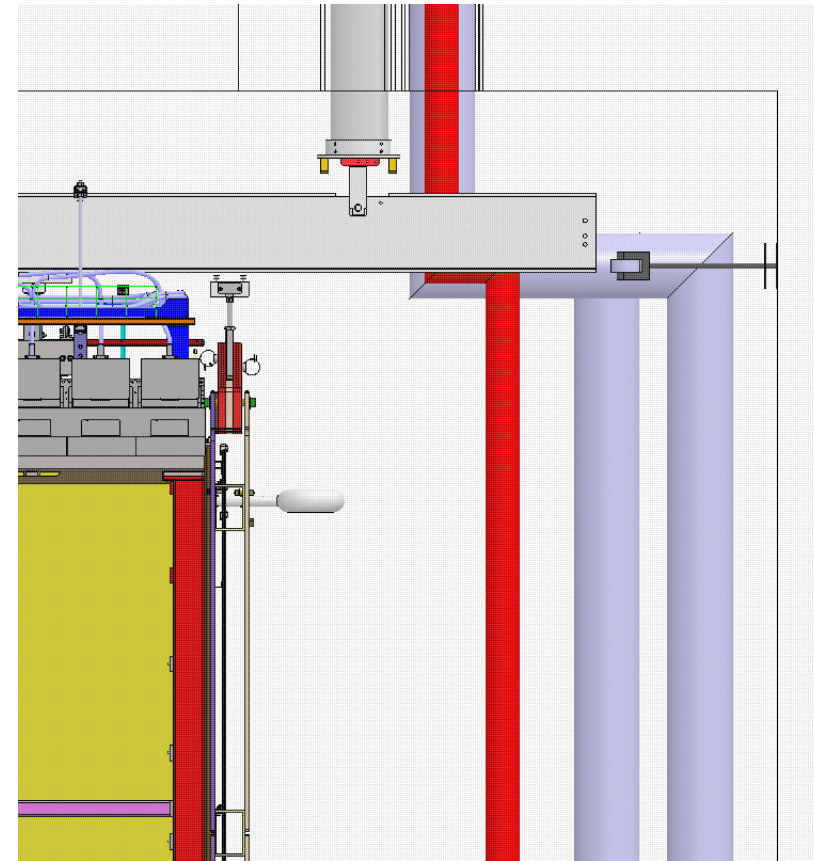
04/02/19

Kyle Zeug

- Update on integration model

Single Phase Model Update

- Component Models Received and Imported
 - Photon Detectors
 - CE cabling on the APA pair and cabling cryostat crossing
 - Internal Cryogenics, GAr purge pipe with 200mm shift to provide more access (old news)



EDMS 2060543

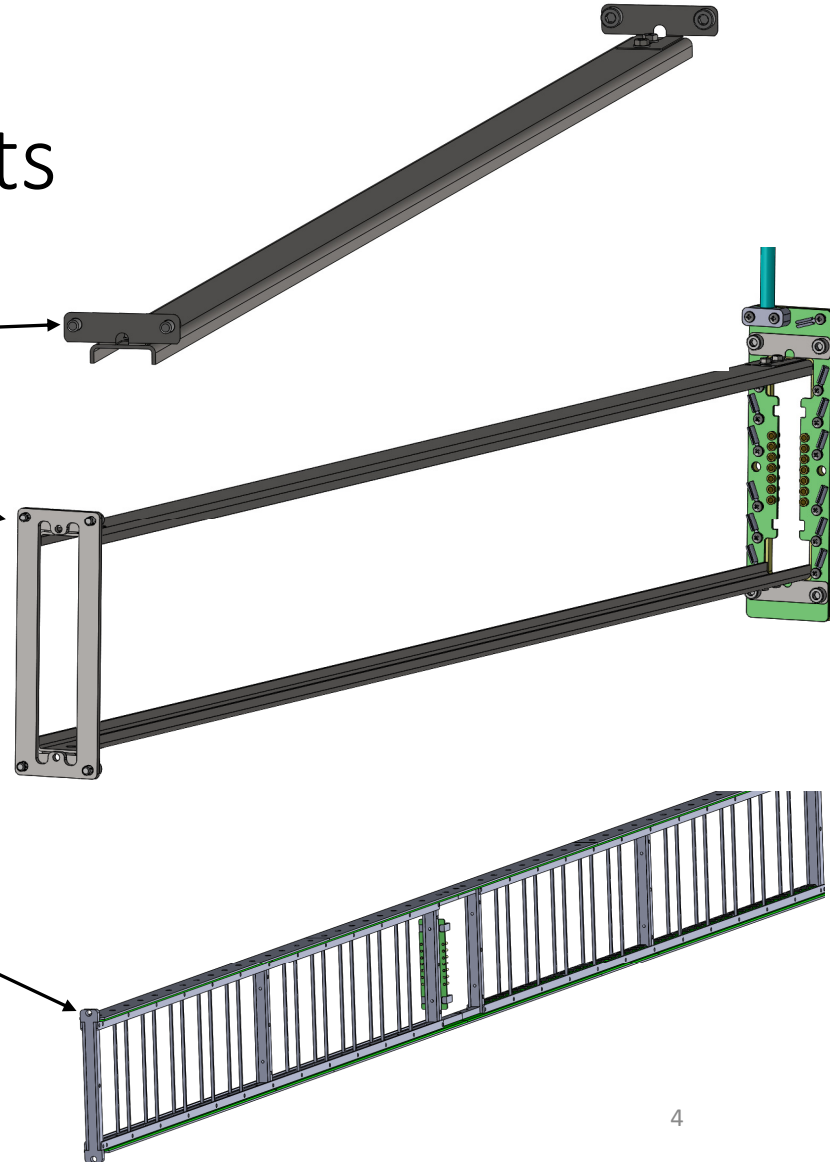
- Last model loaded on Feb 20th, 2019
 - Progress since then will be discussed today
- Full top view with HLV

The screenshot shows a document page in an EDMS system. At the top, the document is identified as '2060543 v.1' with a status of 'In Work' (indicated by a red circle) and 'Public access' (indicated by a globe icon). The title is 'Overall TPC model with TPC centered' by 'FARSHID FEYZI'. The document was created on 2018- and last modified on 2019-. Below the title, there are icons for a star and a shopping cart. A navigation bar includes 'Edit', 'Status', 'Share', 'Visibility', and 'More'. The 'Info' section is expanded, and the 'Files' section is also expanded, showing a table of files.

	Name	Size	Last modified date	Last modified by
<input type="checkbox"/>	Detector_Views_Center_2060543.pdf	4.2 MB	2019-02-18 15:39:55	KZEUG EXTERNAL
<input type="checkbox"/>	Full_Top_View_HLV_2.pdf	23.1 ME	2019-03-04 08:25:09	KZEUG EXTERNAL
<input type="checkbox"/>	TPC_Integration_2019_02_20.STEP	104.2 M	2019-02-20 14:48:06	KZEUG EXTERNAL

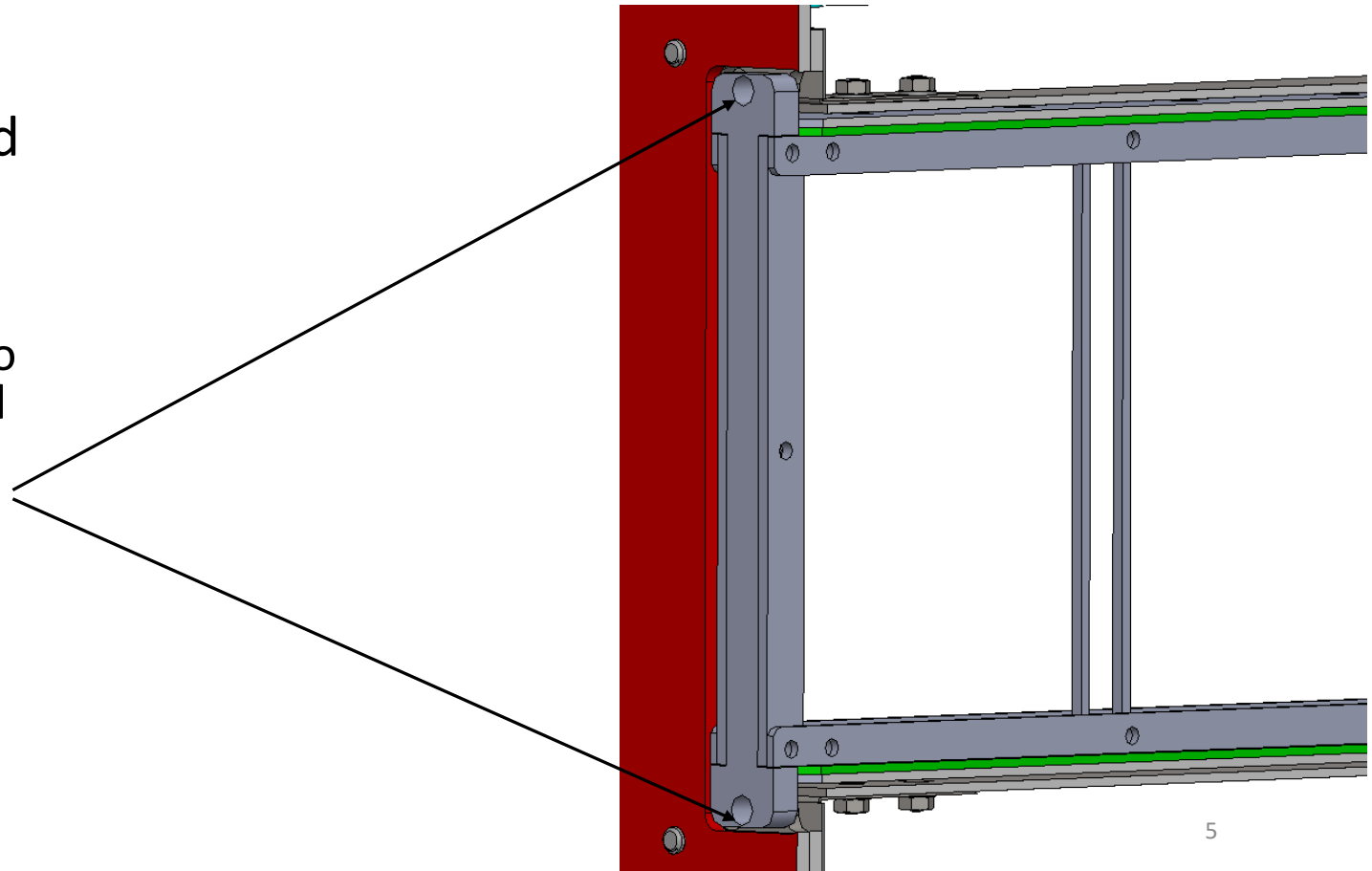
Photon Detector Components

- PD Rails: Far Side
- PD Rails: Readout Side
- PD Cable Bundles and Connectors
- PD Modules



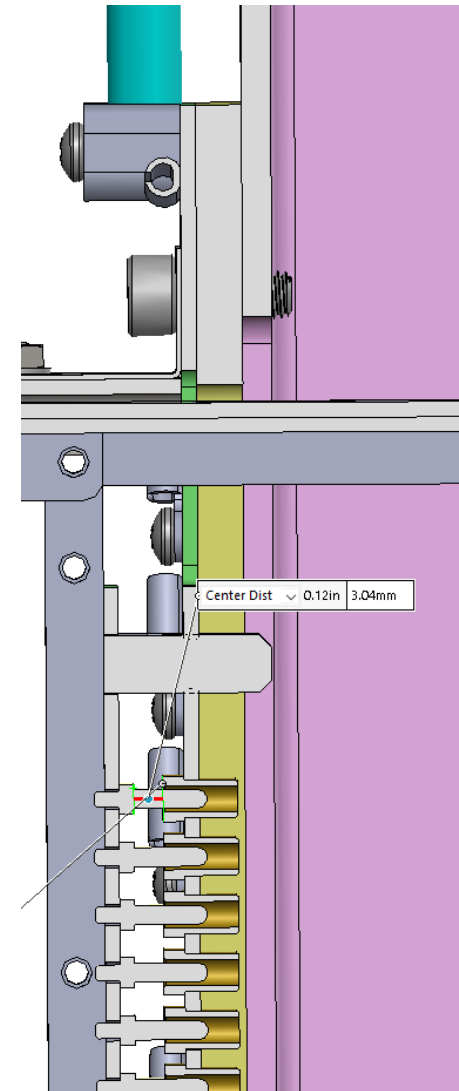
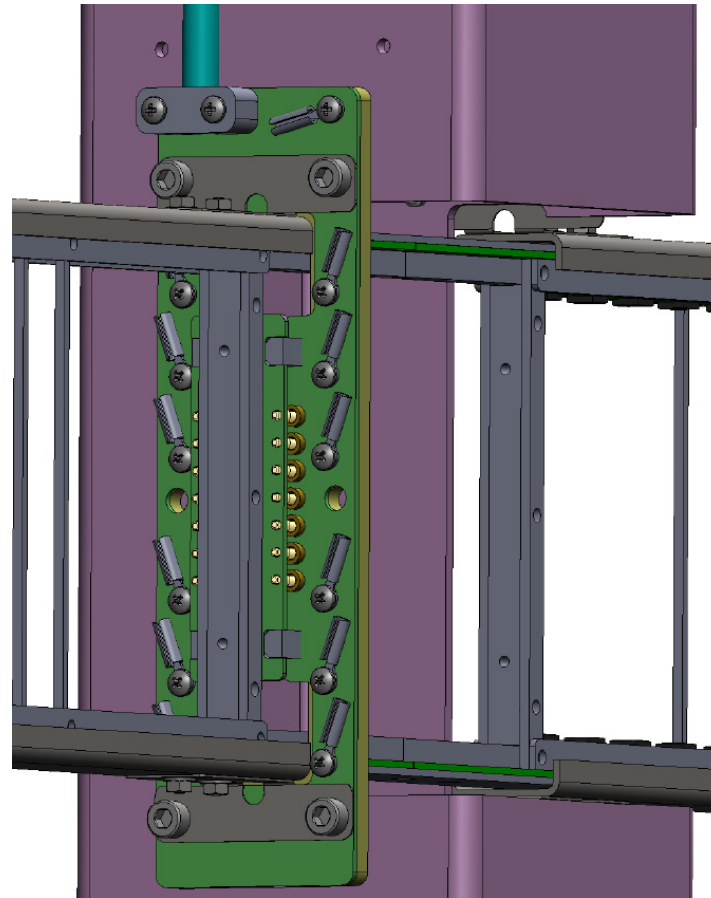
PD Module to PD Readout Rail

- Rail assemblies first installed and cabled on the APA frame
 - PD module is inserted and fastened directly to the PD readout rail assembly
 - This occurs on a side tube
 - Pin connections occur on the middle tube



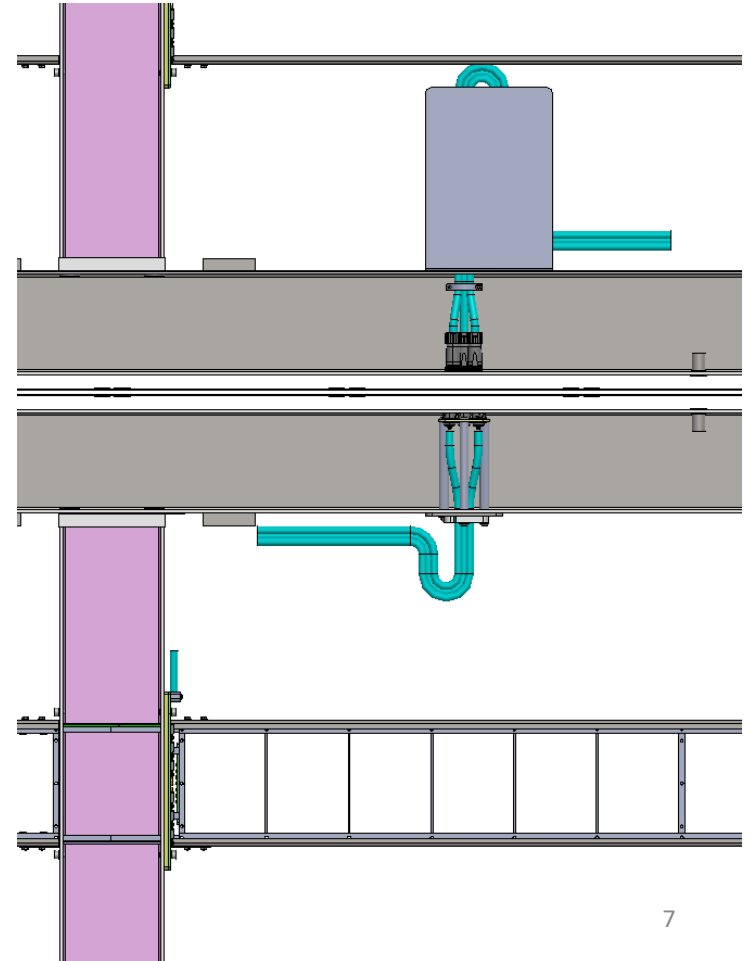
PD Pin Connections

- When the PD is fully seated and secured in the design state there is a 3mm clearance before the pins “bottom out”
- From the PD technical lead this is to account for tolerance and relative CTE



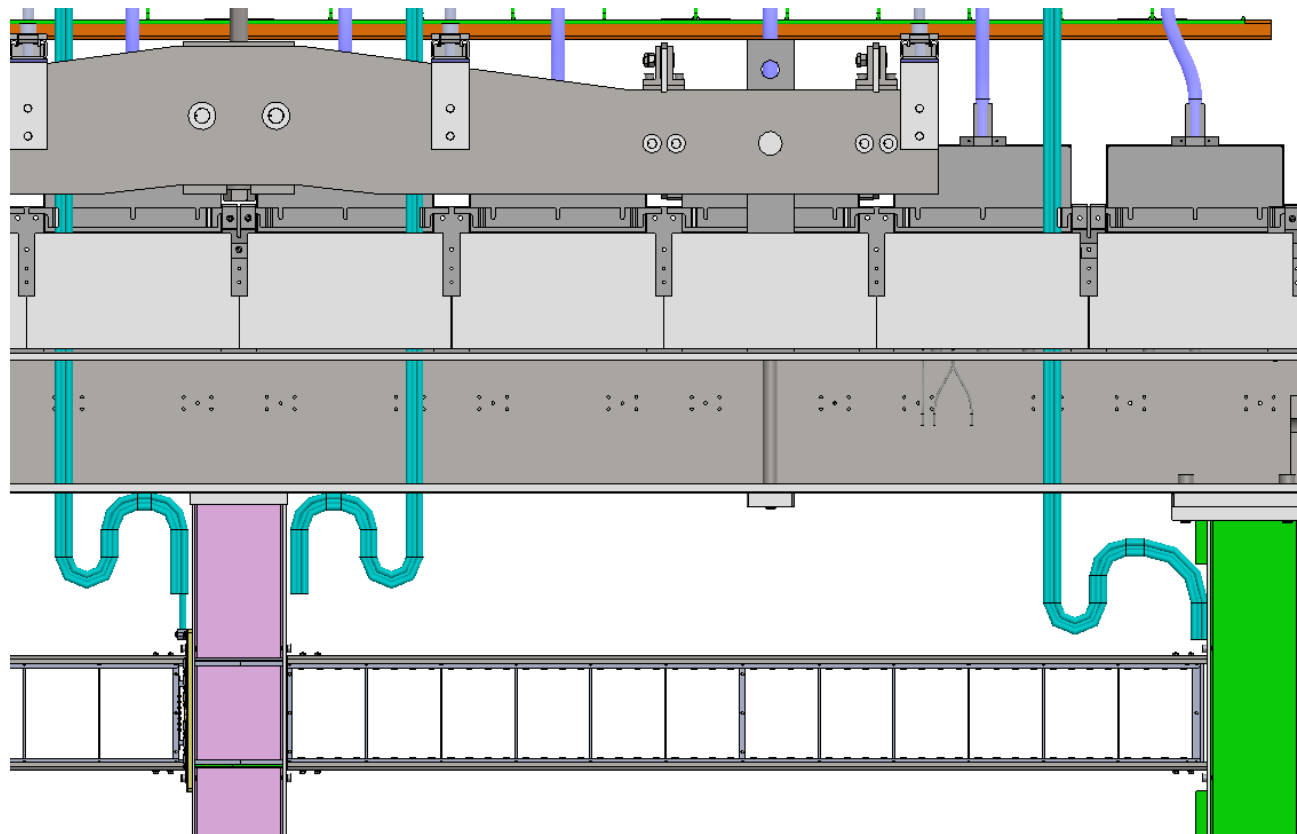
Lower to Upper APA: PD Connection

- Routing the PDs from the lower APA happens at the foot tubes
- Shown at right are five of the ten PD cables routed through the foot tubes



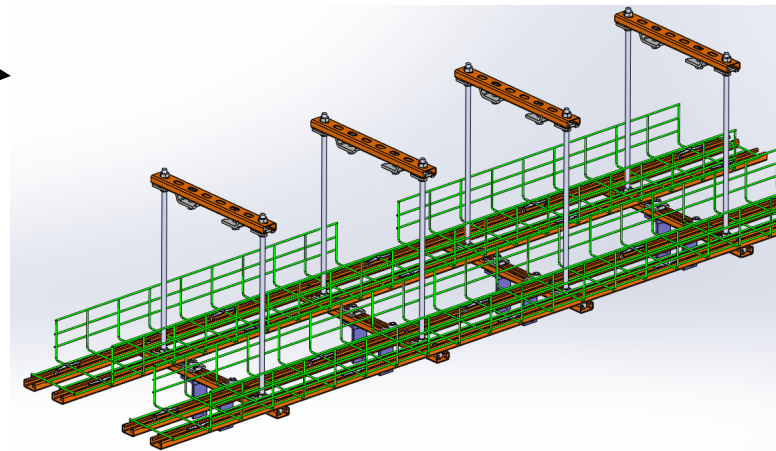
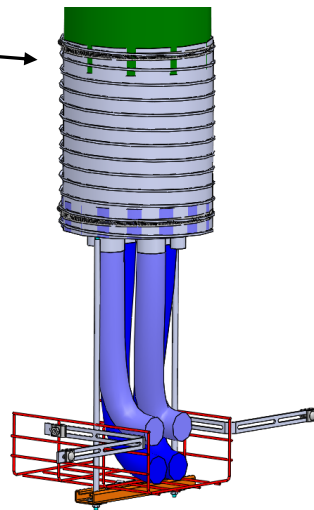
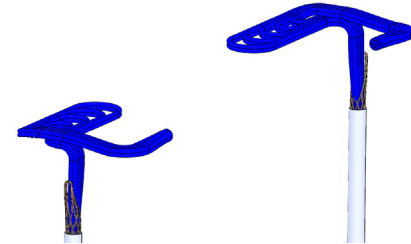
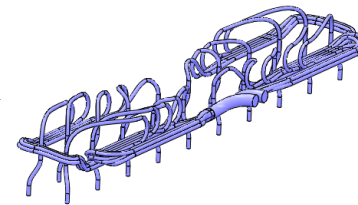
PD Cable Routing

- PD cables from the lower APA are routed along the side tubes of the upper APA
- Four bundles (of five cables) route through the head tube of the upper APA

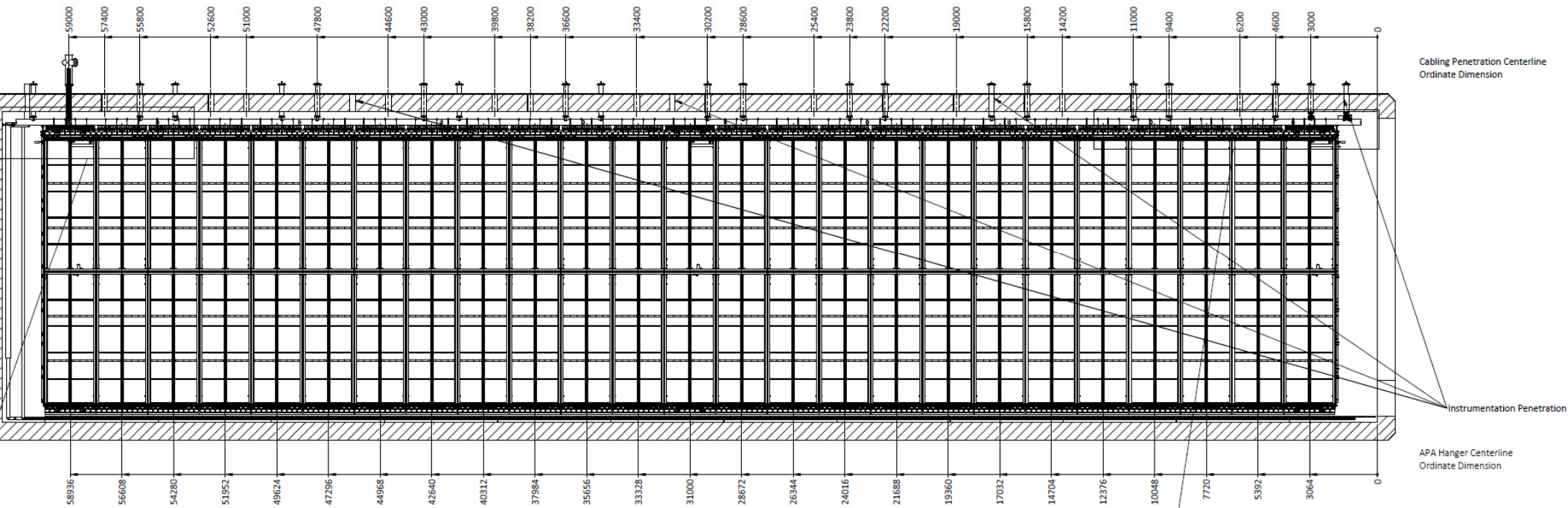


Cold Electronics Cabling Components

- Models of full cabling
- Updated model of the primary cable tray
- Cabling crossing tube and tray
- The relative positions and distance traveled are unique along the length of the cryostat

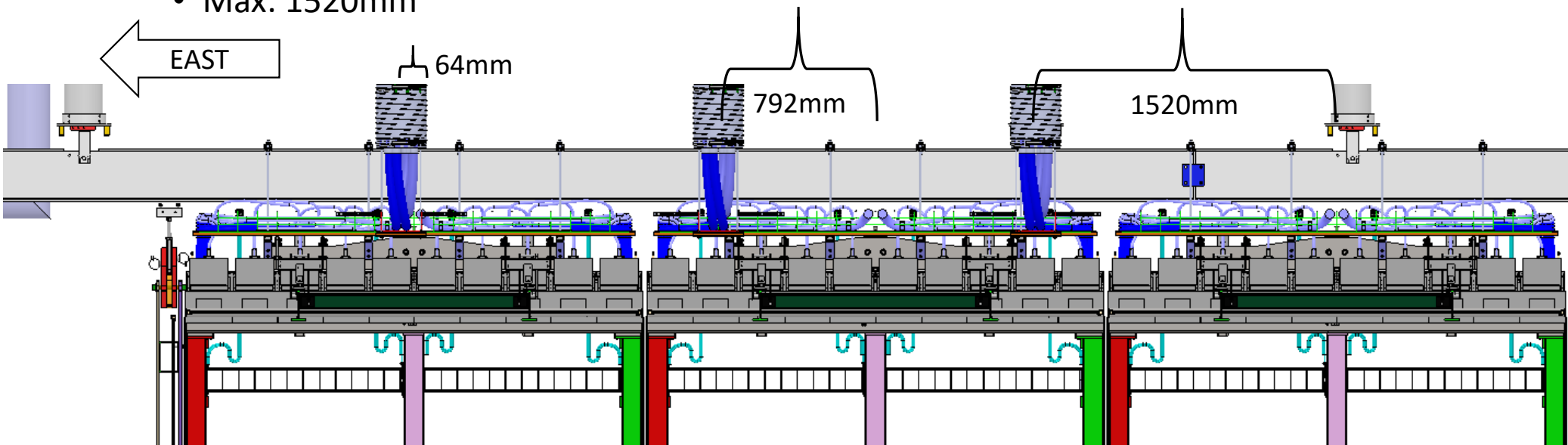


Cable Routing from APA Pair to Cryostat Roof

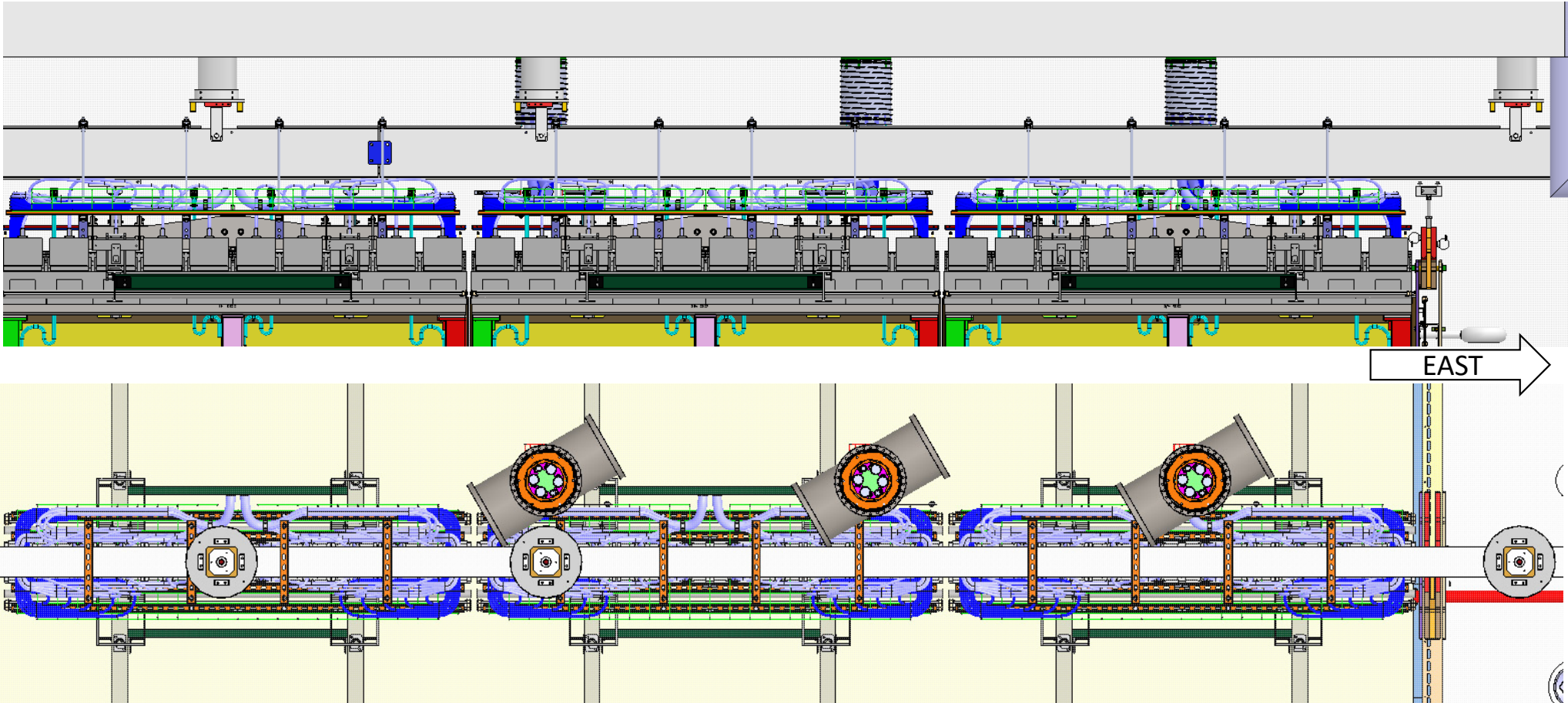


Cabling and Cryostat Crossing

- A longitudinal measurement from an APA centerline to a crossing tube centerline:
 - Min: 64mm
 - Max: 1520mm

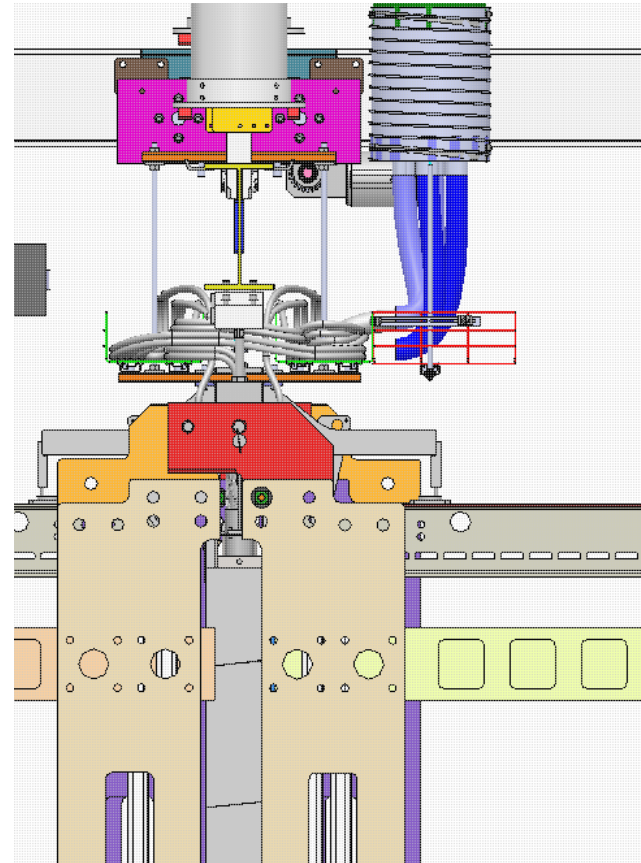


Cabling and Cryostat Crossing



Cabling and Cryostat Crossing, Side View

- End view looking west of the middle APA shown at right



Making the Connection

- There will be cases where the two cable trays cannot be “branch” connected

