

FD3 2t prototype activities at CERN

➔ Buildings 185 & 182



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2t prototype status

➔ Reminder -> what has been done previously:

- Mechanical assembly was finalized
- Readout components (voltage filter boxes from 50L) were installed
- Camera, LEDs, pressure and vacuum sensors, level meter were installed and connected
- HV connected to the cathode and the upper plate to the divider board
- The cathode was polished and reinstalled
- Grounding is done

➔ The prototype is lowered into 2t dewar

➔ The recirculation system was redone and connected

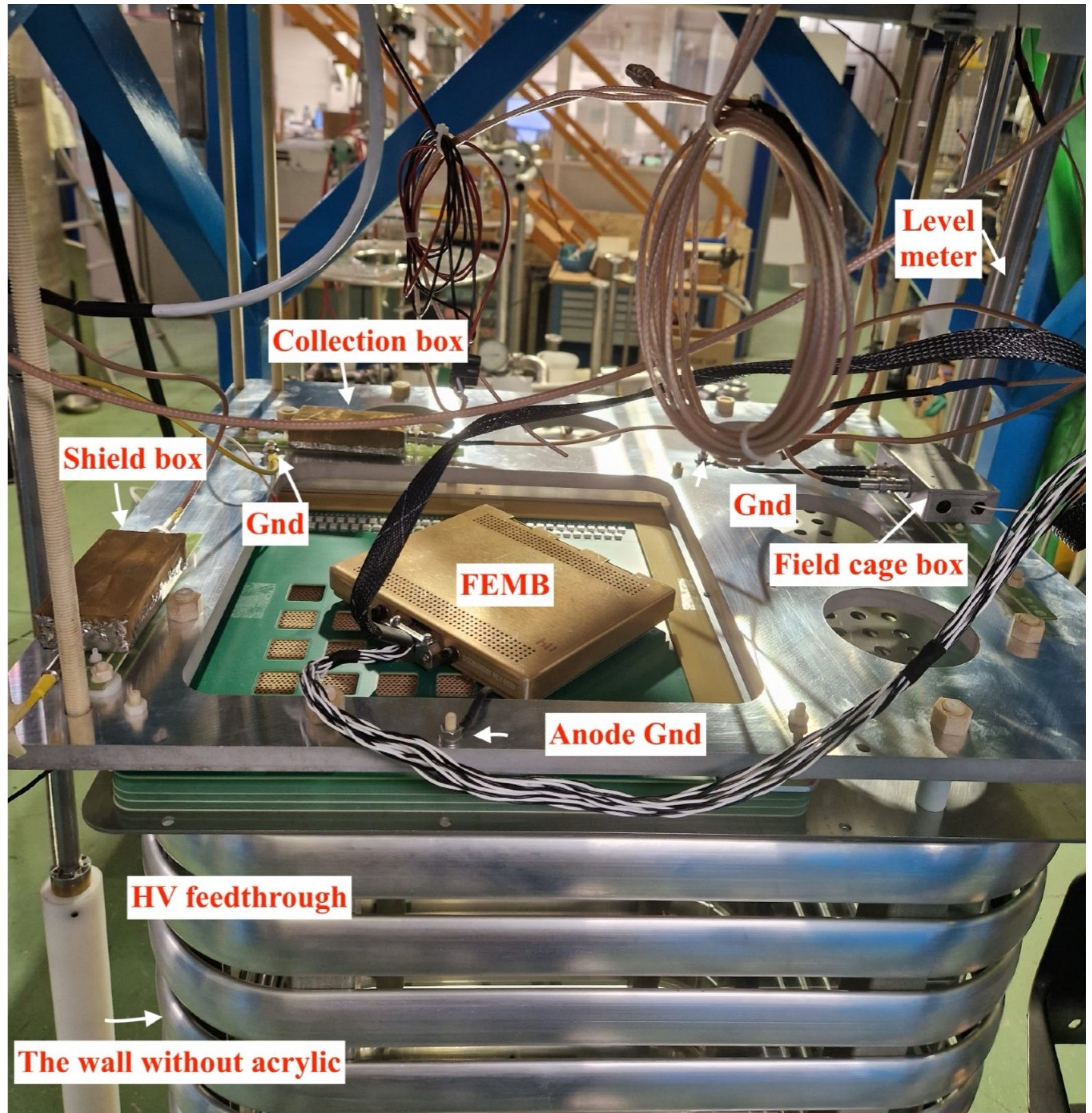
➔ The vacuum pumping is ongoing (currently at $\sim e-04$)

➔ Additionally:

- Modifications wrt 3D model are gathered in this document: [link](#)
- Data taken and analysis plan discussion

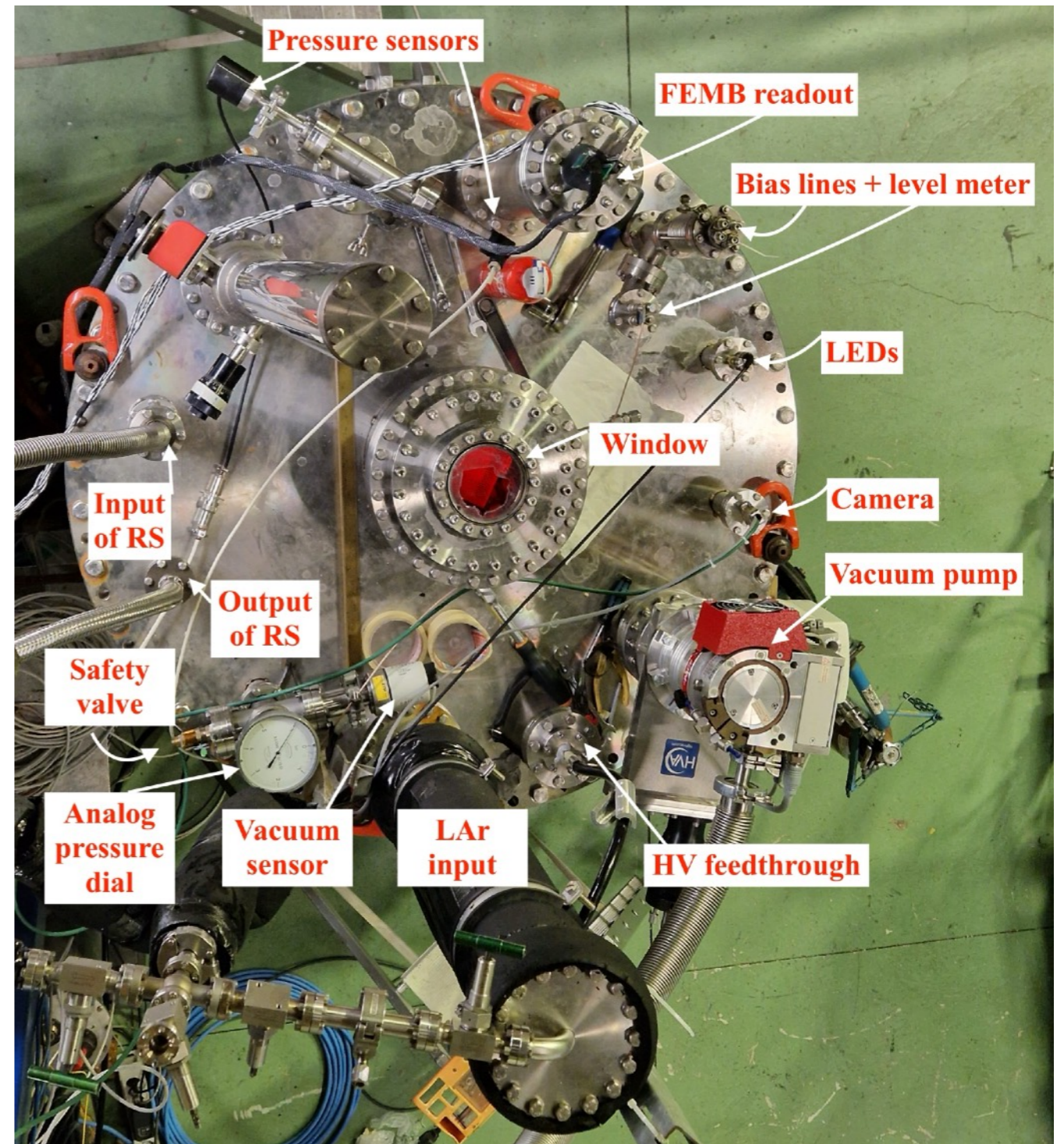
2t prototype status

➔ Reminder -> what has been done previously:



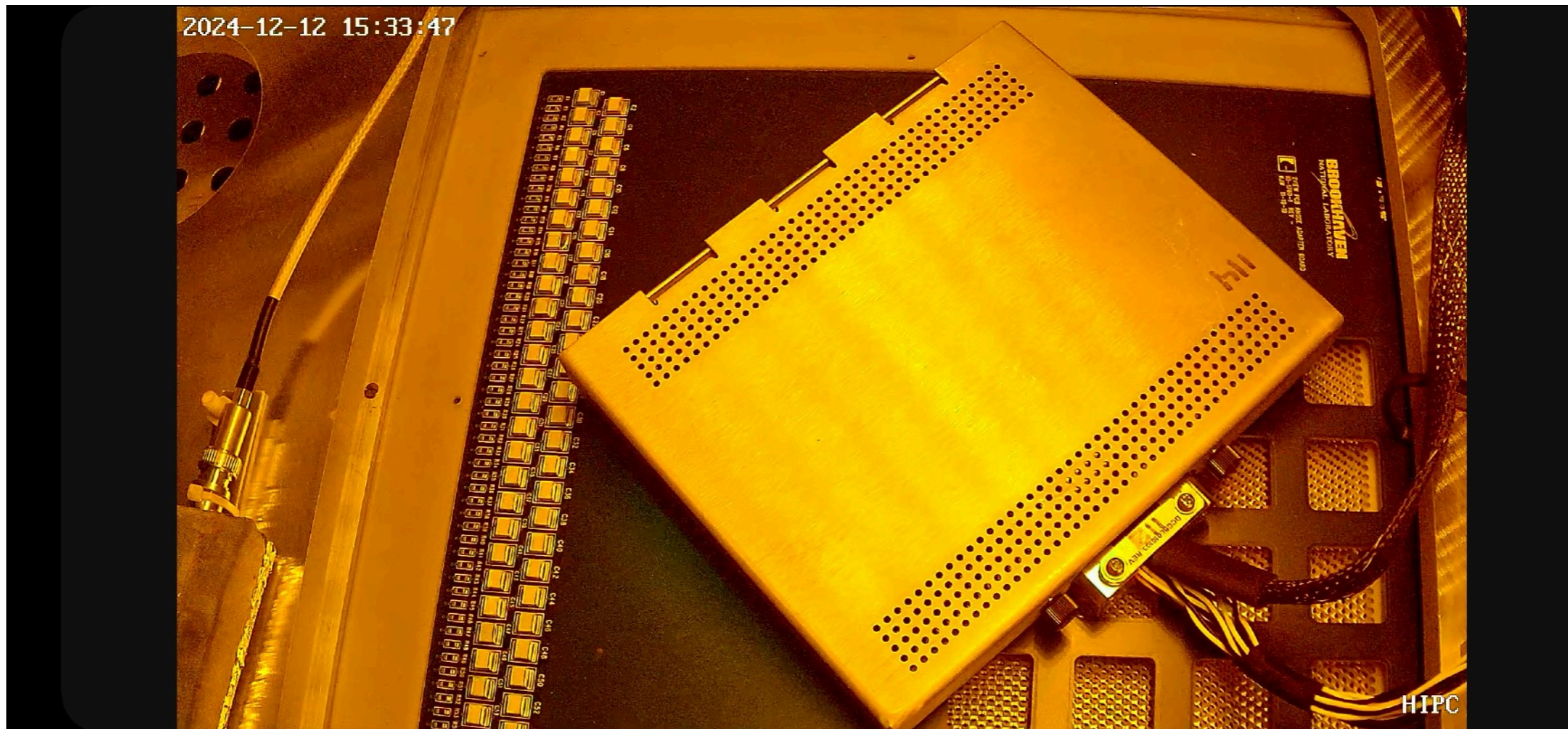
2t prototype status

➔ The prototype lowered into 2t cryostat + recirculation system redone and connected




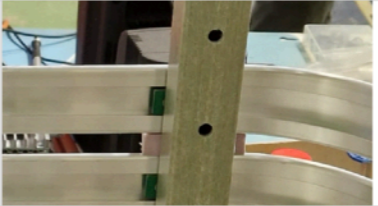
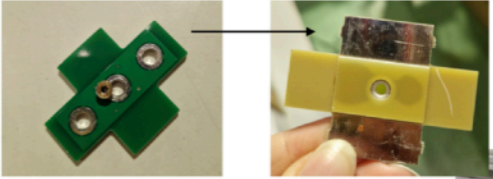
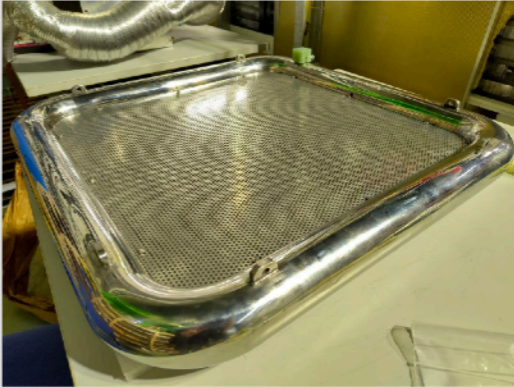
2t prototype status

➔ Camera view



2t prototype status

➔ Modifications wrt 3D model: [link](#)

Name of the piece	Issue	Modifications	Picture
SS top	Drilled holes were not aligned with those on the flange	Elongating the holes	
Al profiles	The vertical bars are too close to the bent parts of the profiles, making it very difficult to align the slip nuts with the holes in the bars for the screws to reach them.	Move the vertical bars to the straight sections of the profiles, away from the bent parts.	
Slip nuts	<ol style="list-style-type: none"> 1. The standard slip nuts were constantly breaking during the mounting 2. The improved nuts for the voltage divider do not provide the connection to Al profiles. 	Use the improved slip nuts for mounting to the bars and the standard ones for the divider board	<p>Standard Improved</p> 
Cathode	<ol style="list-style-type: none"> 1. Need to be polished, otherwise will cause bubbles 2. Due to the precise sizing of the threaded holes and the gap in the insert bottom FRP pieces, it was very difficult to align FRP holes with the cathode. 3. The gap in the FRP was made very precisely. Due to the welding, we could not align some of the holes of the cathode with FRP inserts 4. Only one hole in the cathode for the circulation 	<ol style="list-style-type: none"> 1. Cathode was polished 2. Extra welding removed 3. Three more holes were added on each side of the cathode symmetrically to the already existing one 4. Passivation (to increase the electric neutrality) 5. The weight of the cathode can be reduced; currently, the entire prototype weighs ~ 70 kg. 	

Discussion slide: data taking and analysis plan

- ➔ Vertical tracks with the external trigger (scintillating pads) + software trigger
- ➔ Horizontal tracks with the software trigger
- ➔ **Data format and storage?**

THANK YOU!