



Cubism - Braque's Bottle and Fishes, Paris c.1910-12

Summary of first Mod0 run



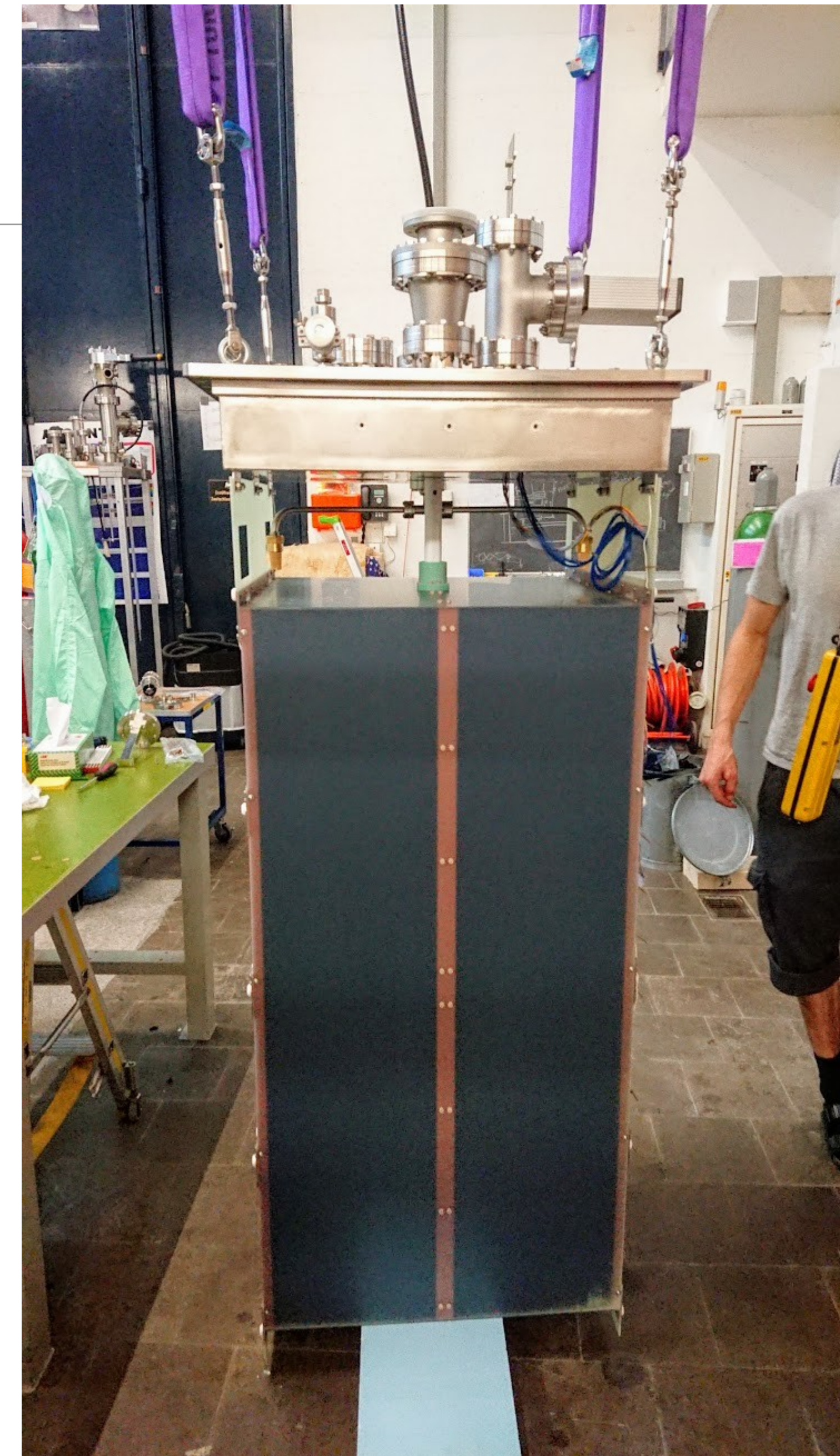
ArgonCube call
December 10th 2020
James Sinclair, LHEP

A lot can happen in a month



On the November 3rd the SingleCube run was completed, successfully.

22 days later Module0 tests started.
Finishing, successfully, November 30th



Readout

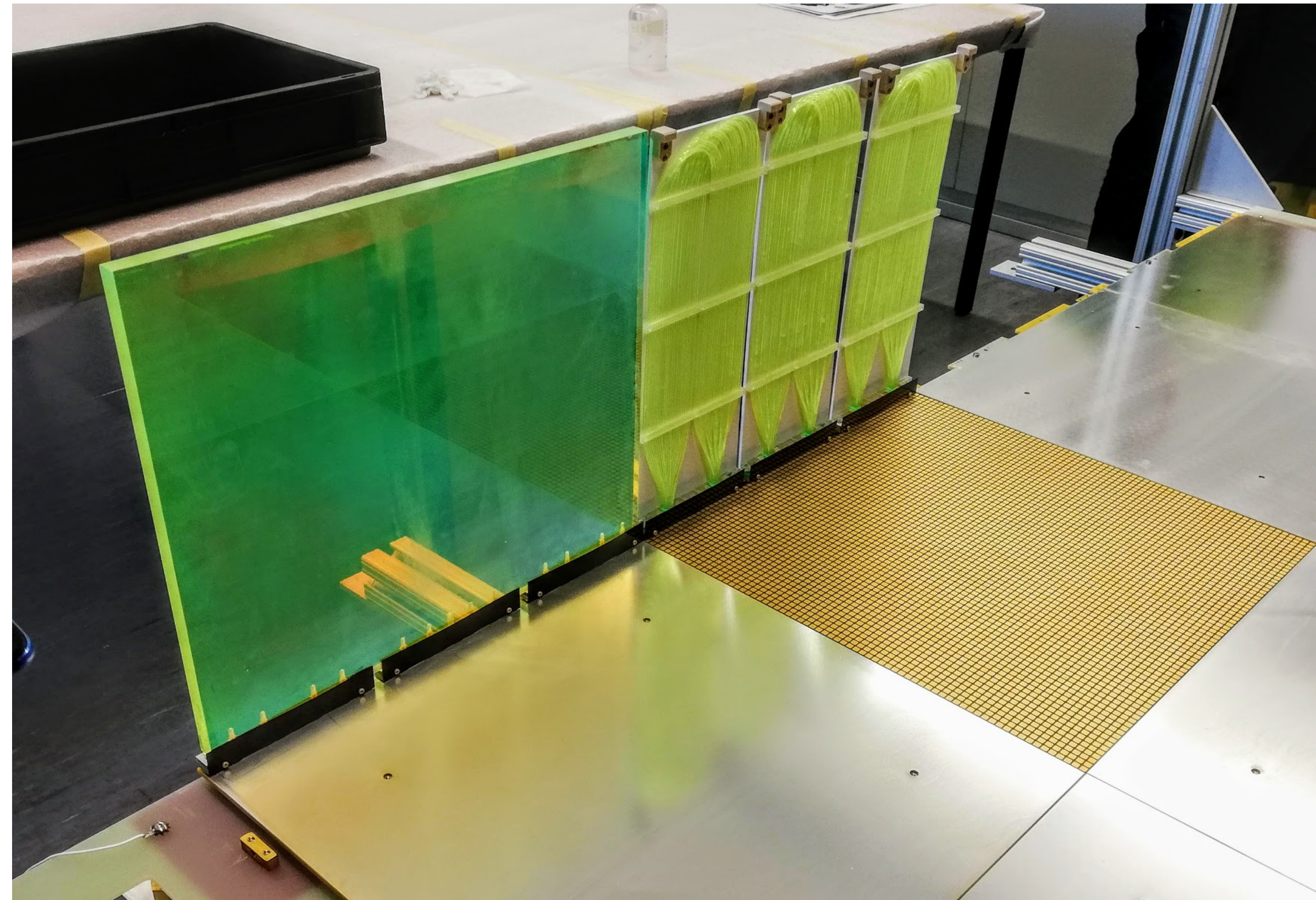
The charge and light readout from the SingleCube were transferred over, with the addition of a Dubna LCM to provide the trigger for LArPix.

The remaining 15 anode tiles were left blank.

Igor presented some initial results from the Light RO (& setup) yesterday:

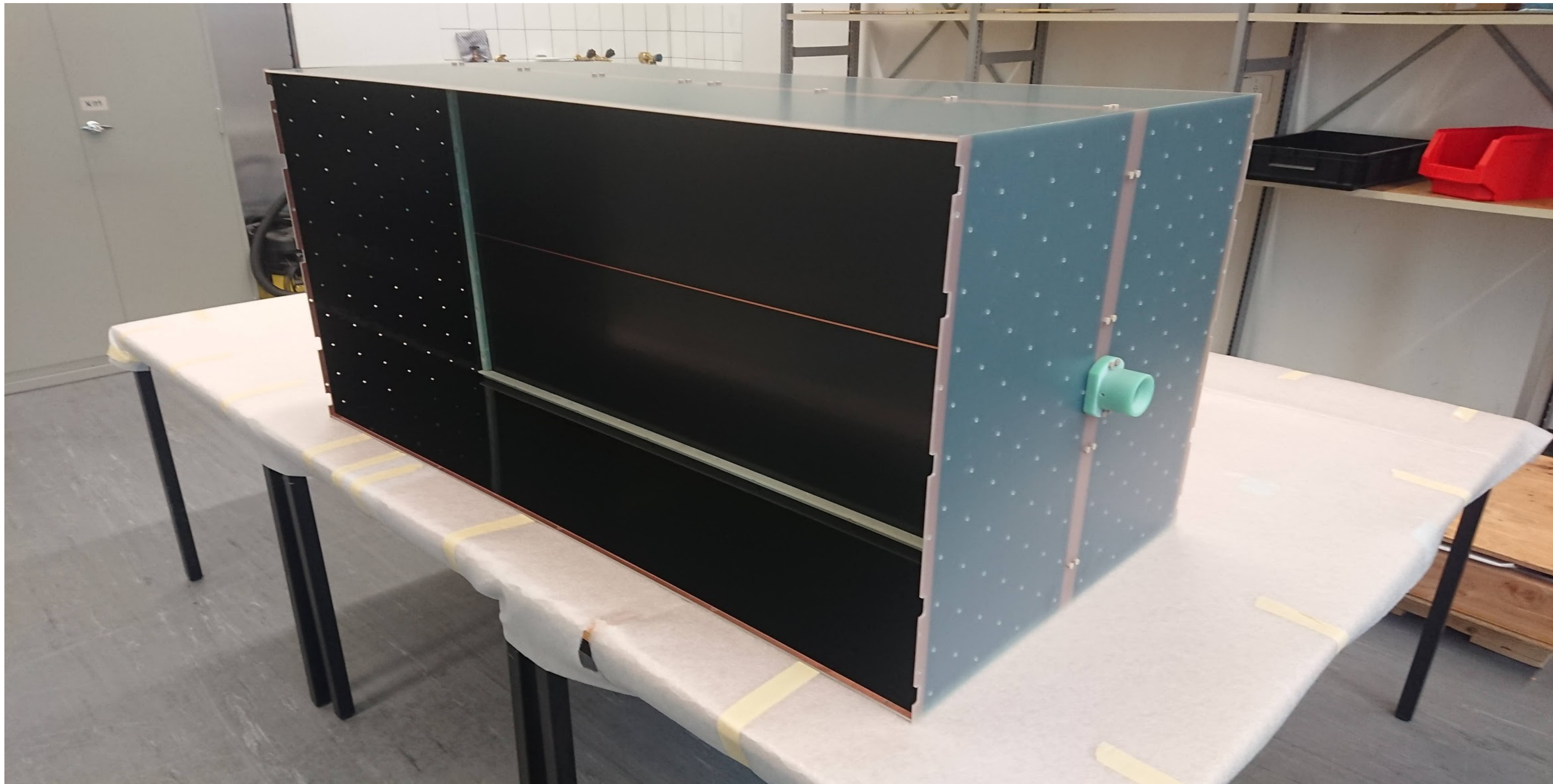
<https://indico.fnal.gov/event/44565/>

Brooke will show initial LArPix results shortly.



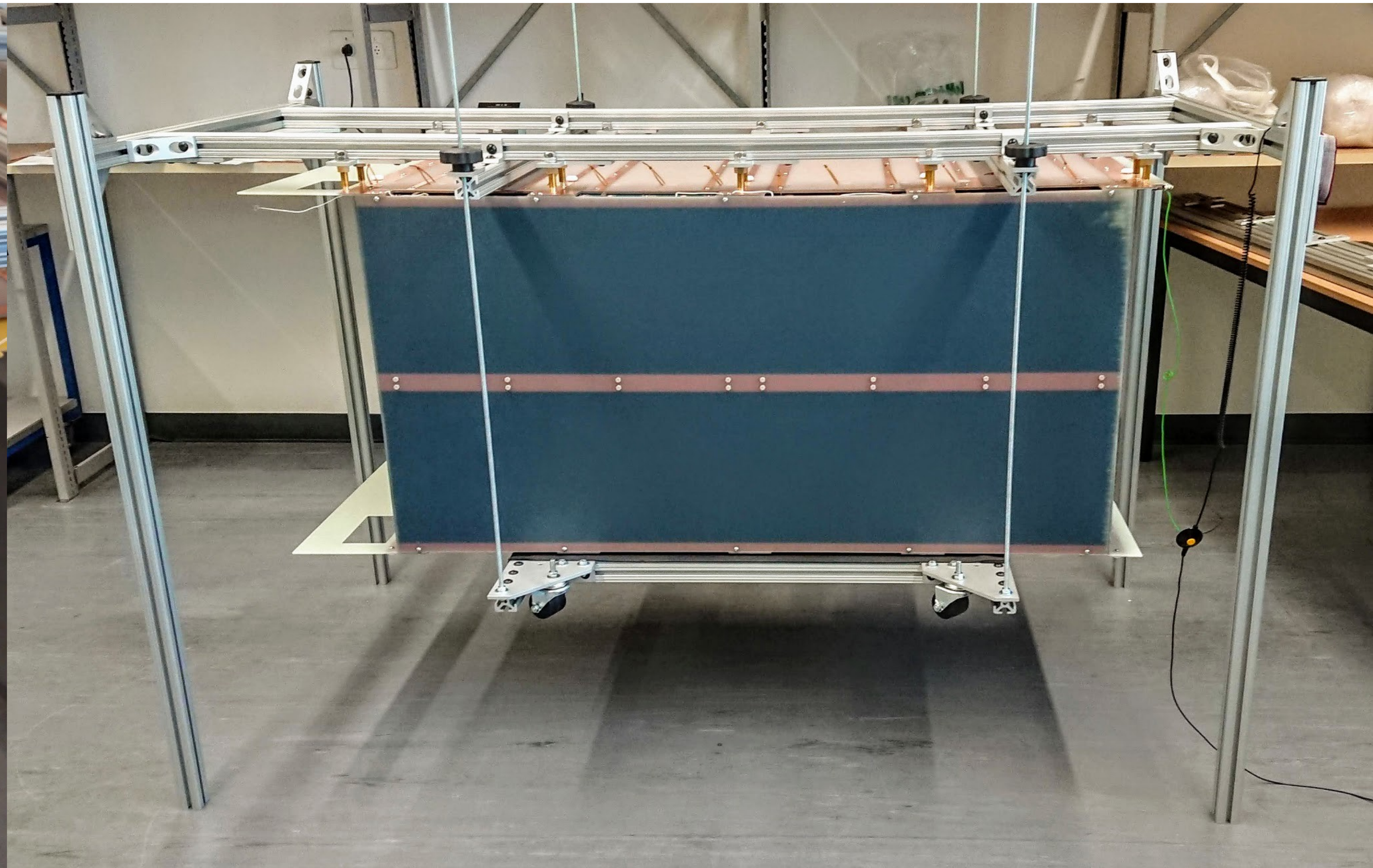
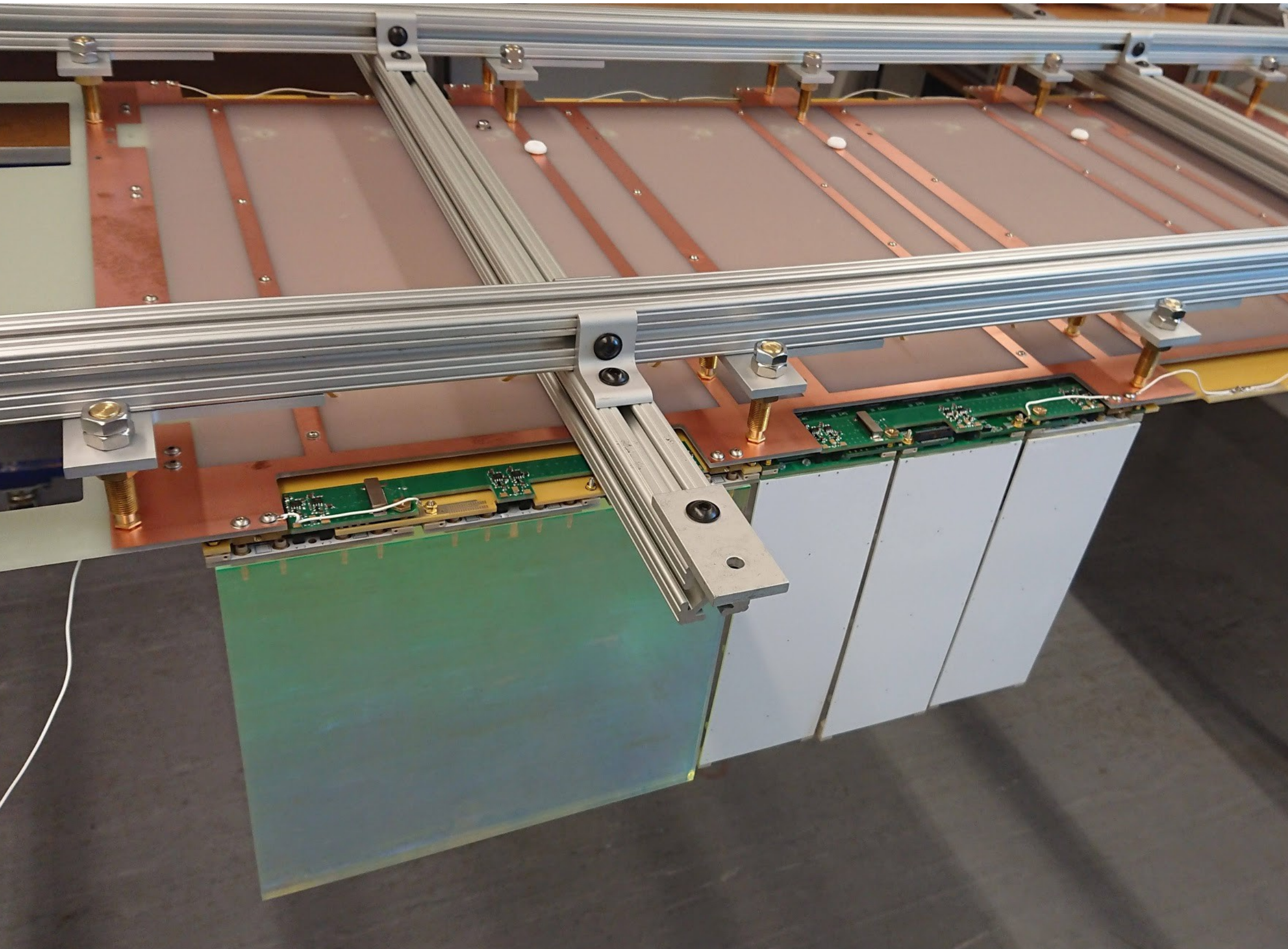
TPC

SLAC delivered the flat-pack TPC to Bern in late September, and second HV feedthrough & cable at very short notice.



Assembly structure

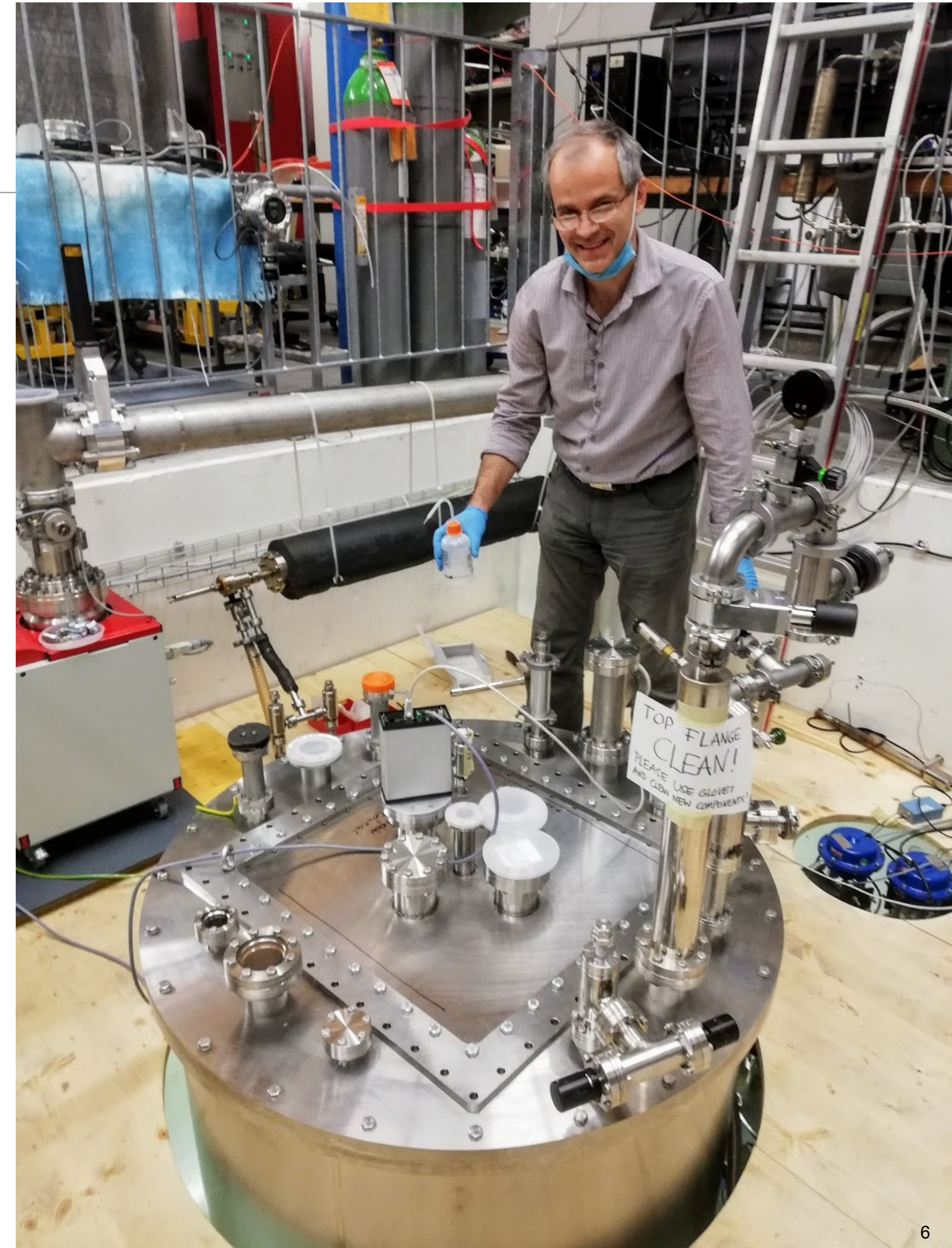
SLAC & CSU worked together on an assembly jig and procedure, which CSU provided to Bern in late October.



Module structure and cryostat

There has been a huge effort locally to get all this built and running.

Working first time and on time has taken a lot of preparation.

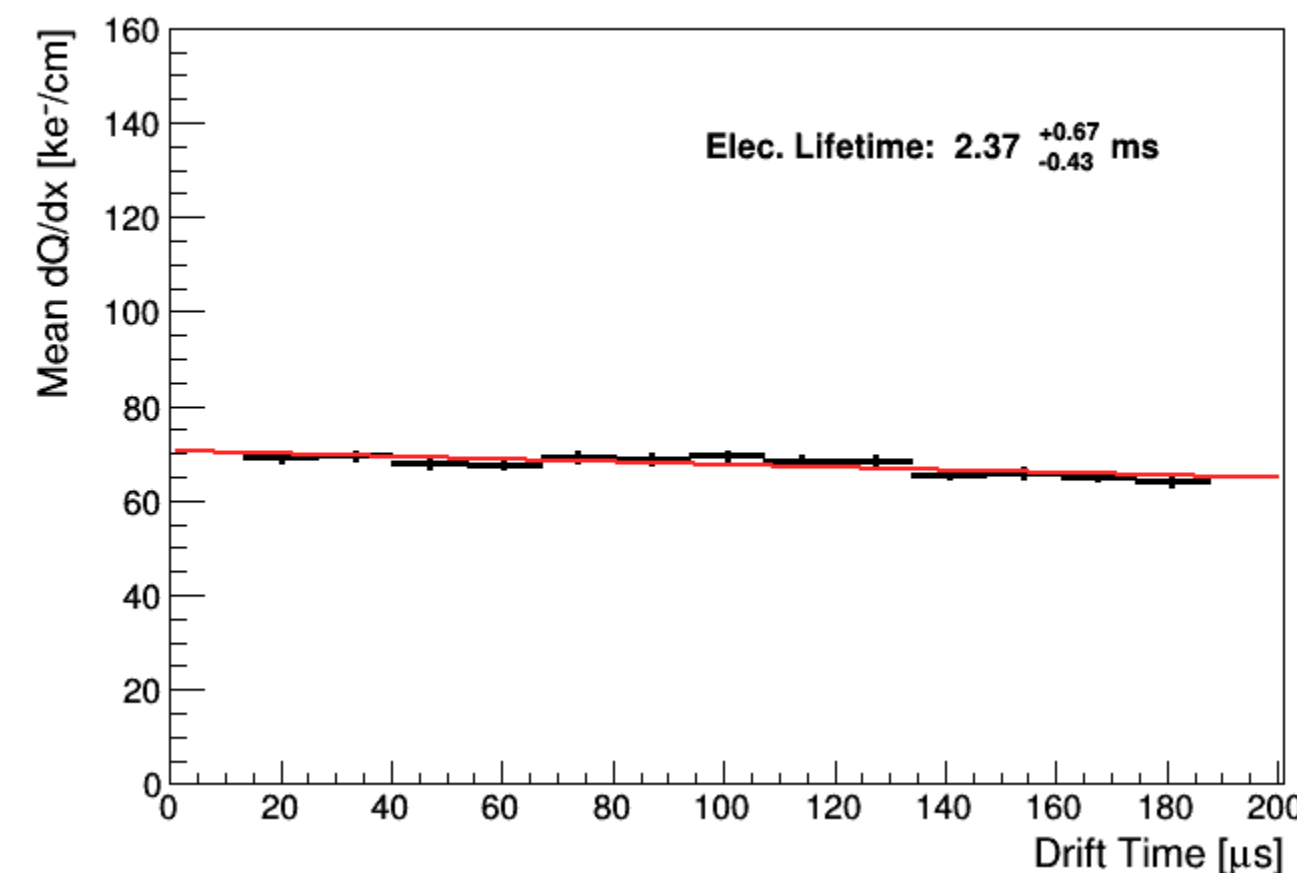
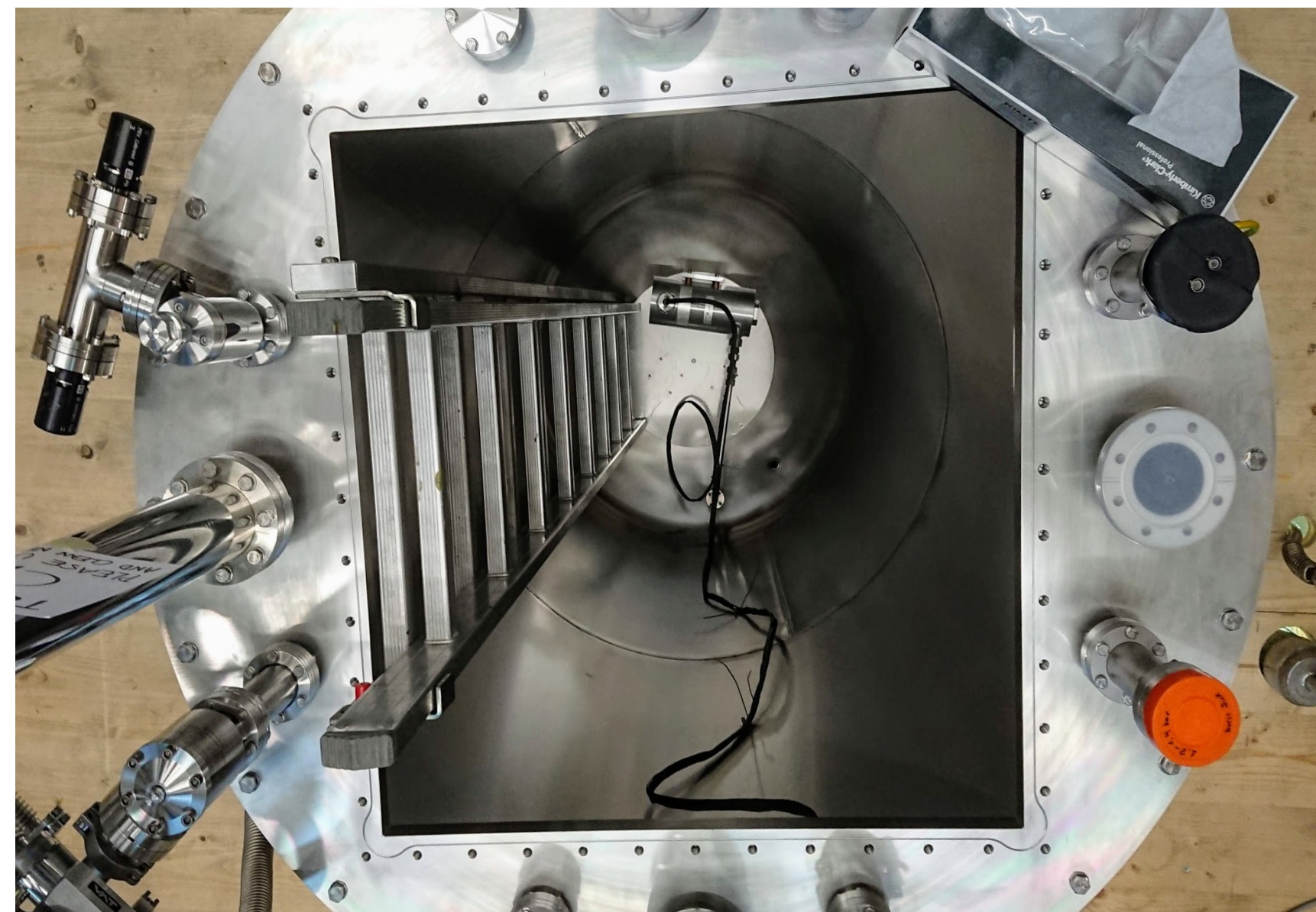
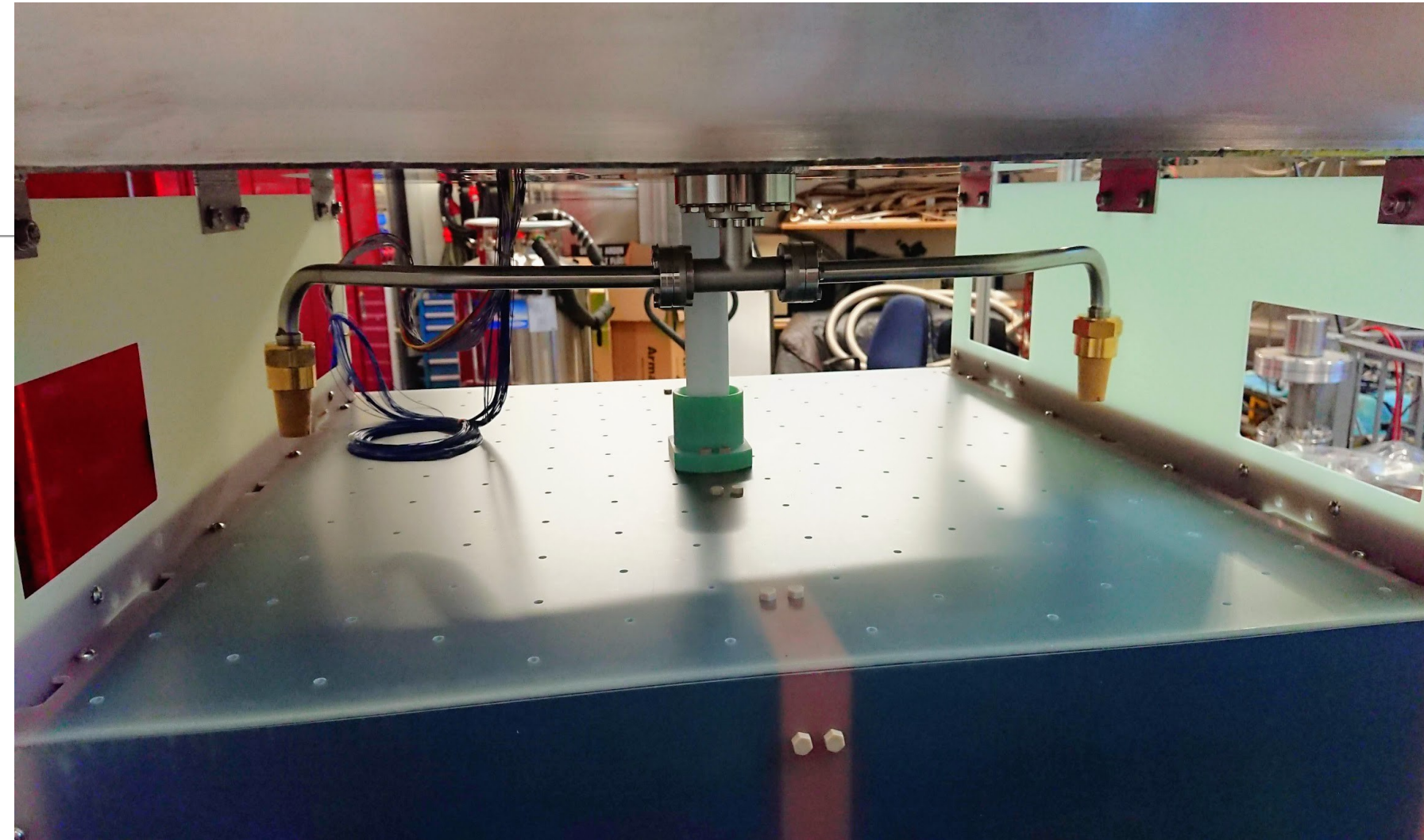


Recirculation – ND style

LAr extracted below the module, by a submerged pump.

LAr is then pushed through vacuum insulated lines to an external LN2-cooled filter (FNAL design).

Clean & cool LAr is then injected above the TPC.



Recirculation

The filter LN2 cooling was operating at ~40% capacity, but the pump was operating at 75% capacity.

The largest heat input was found to be the top flange ~240 W.

The vacuum pocket will be extended further (180 mm) up the liquid inlet.

A screen will be install below the cryostat top flange to stratify the ullage volume

...as suggested by Knut



Some improvements for next time

Reduced heat input at topflange

Fermilab PLC to replace the ArgonTube system.

LAr pump BN HeP-36-000 pump
(100 l/h \rightarrow 2k l/h)

External LAr Flowmetre 8F5B25
Promass F 500 (Coriolis)

Automated Exhaust valve
Weka low pressure control
valves PM-TEQV DN6/PN25
C-Ps/Po

