

CRP Cold box meeting

ProtoDUNE-DP

- Introduction
- Proposed design
- Next steps

Goal and requirements:

Main goal: Test the CRP (3mx3m) with the grid immersed in the liquid

- Tests the HV behaviour of the grid and LEM HV
- Look at possible mechanical effects: only macroscopic effects with camera, After warmup: can see changes in grid tension
- LEM-grid capacitance
- Level meters to check the position wrt the liquid

Requirements on the cold box:

- Need a flat liquid surface as much as possible (within 2 mm which is very stringent)
- Requirements on the gas purity, pressure: about 100 ppm, slightly above atmospheric pressure
- To be able to monitor the temperature gradient (done with temperature probes at different places)
- System stays open to atmosphere but preventing contamination, for instance with the exhaust via a bubbler
- The cover should guarantee the horizontality of the CRP

The design should take into account:

- the requirements,
- the inputs concerning the location and
- the procedures foreseen after the tests (includes warming up process, CRP manipulation etc....)

Where:

in 182 close to the 3x1x1 cryostat

Important: the place should not be too dirty but cannot be a closed area (grey room, or even a tent).

The working place should be large enough to allow manipulation before and after the test with the CRP box. The CRP box will be used to enter in the cryostat after the test.

Next steps:

- Finalise the cold box design
- Construct the cold box
- Assemble the 1st CRP in 185
- Design and build the HV feedthrough
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