Detector Support Group

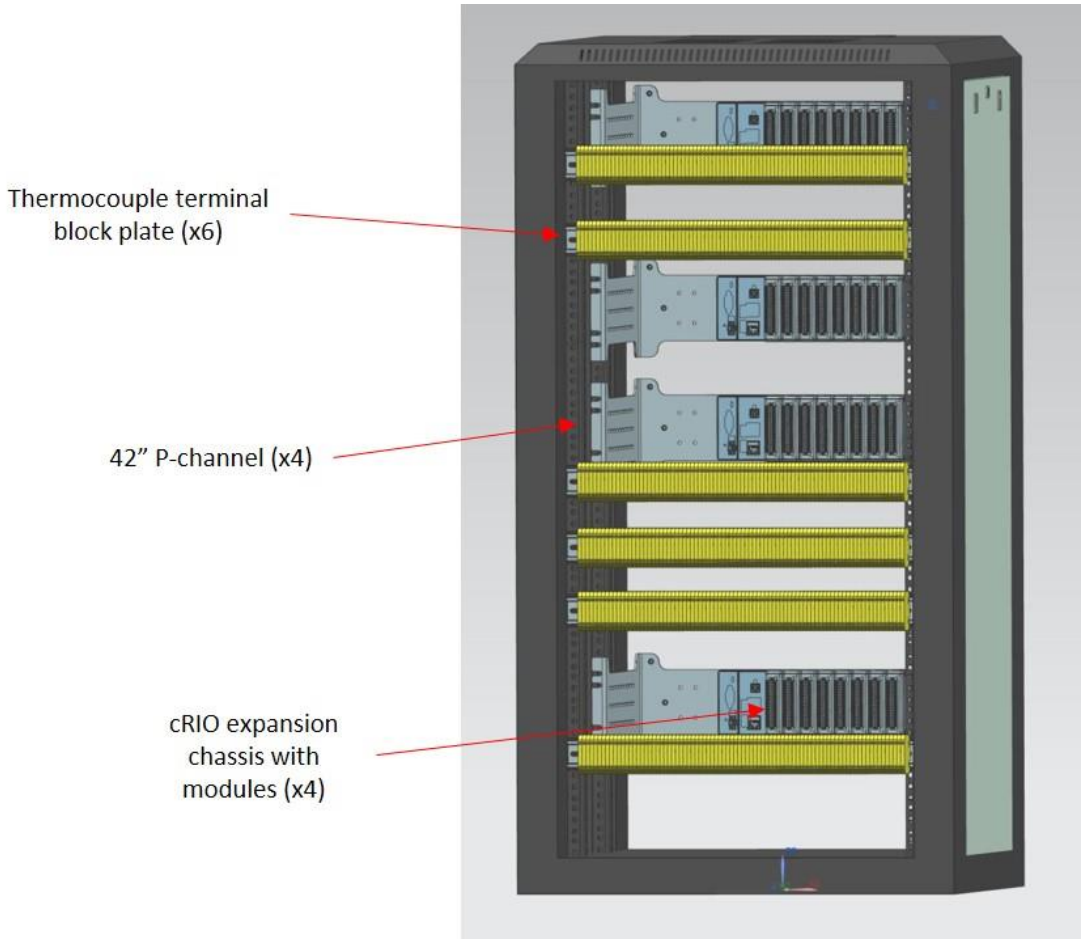
We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2024-05-01

Hall A – ECAL

Marc McMullen

- Completed review of the second version of the power supply interface chassis
  - ✶ Changed fuse positions and added text to the front and back panels
  - ✶ Sent design for quote with Par-Metal
- Continued model of the controls rack with cRIO expansion chassis and thermocouple terminal blocks
  - ✶ Designed 42-inch "P" channel for controls rack
  - ✶ Updated rack component positions



NX model of ECAL heater controls rack for the full system

Hall A – LAPPD

Pablo Campero and Marc McMullen

- Designed 3D-printed clamp for *X* and *Y* rails
- Installed gantry positioning system inside dark box

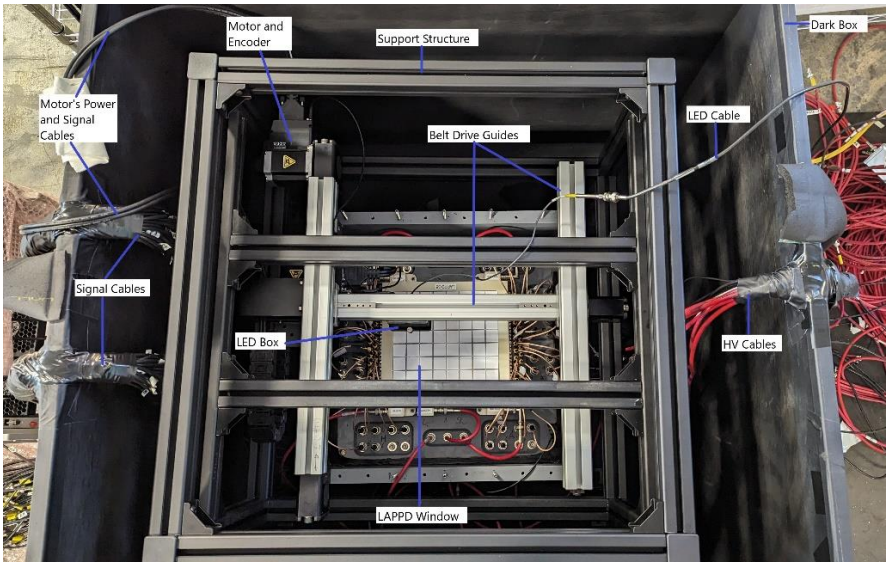


Photo of test stand dark box without cover in ESB building

- Installed LED cable assembly and tested gantry

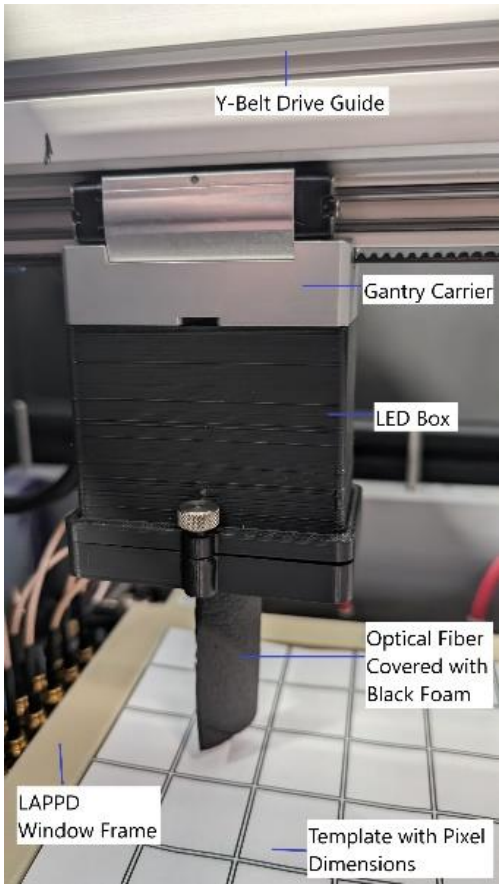



Photo of optical fiber installed in LED box and covered with black foam, left. Powered LED over the LAPPD window, right

Hall A – Møller

Brian Eng

- Updated MPS firmware from 2.1.5 to 2.1.6 on TM3 supply to add EPICS functionality
  - ✶ https://logbooks.jlab.org/entry/4292969
- Tested 5-ft cable for MLX90393 magnetometer board, needed to add additional pull-up resistors to lower value (allow for more current)
  - ✶ Originally was 10 kΩ on sensor side + 10 kΩ on controller side, in parallel, for 5 kΩ; added additional 1.5 kΩ in parallel on controller to bring overall resistance to 3 kΩ

Hall C – NPS

Mary Ann Antonioli

- For version 3 of LabVIEW program, finished revising array builds of EPICS variables to LabVIEW variables and breakouts of LabVIEW variables to EPICS variables; used array builds and break-outs in making subVI of two cases, either LabVIEW or EPICS control
- Revised seven of eight Phoebus screens, removing unnecessary buttons, controls, and indicators, resizing buttons, and rearranging remaining widgets

Hall D – FCAL2

George Jacobs

- Tested 89 PMT bases; 968 good bases tested
  - ✶ One had shorted low voltage caps (output amplitude lower than expected) and seven had no signal

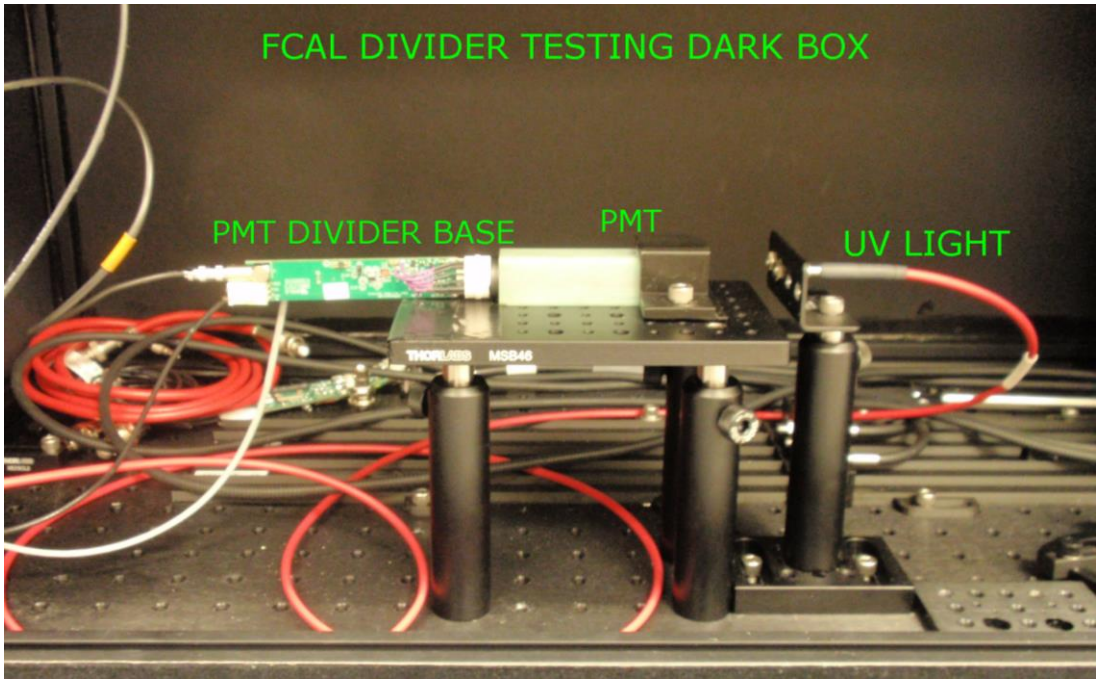


Photo of FCAL2 PMT divider base testing dark box

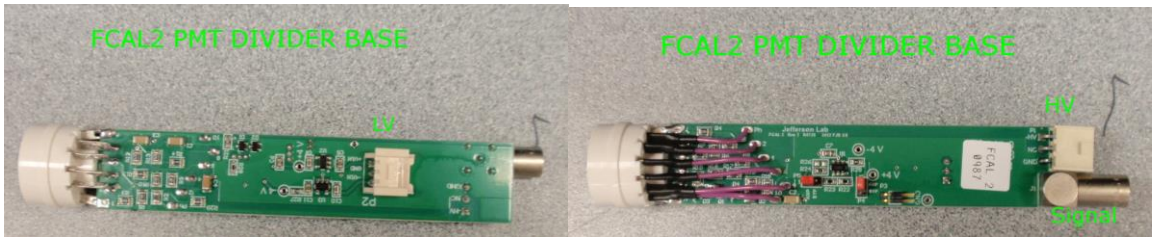


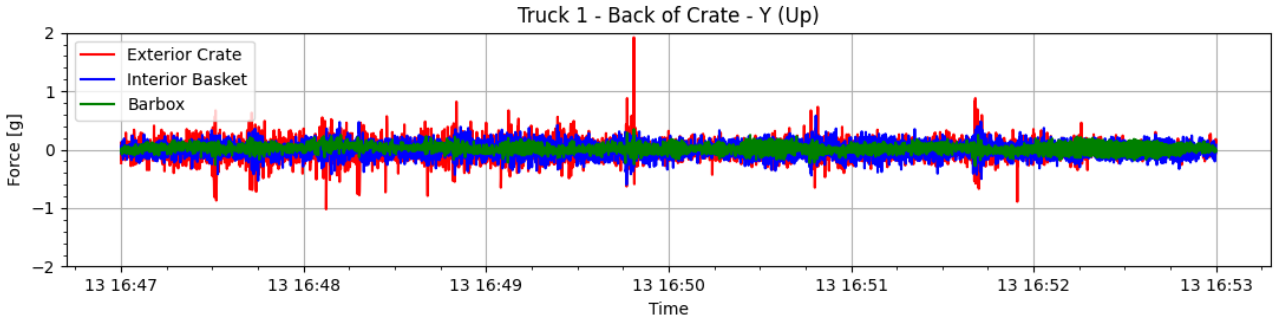
Photo of divider base bottom view, left, and top view, right

Oscilloscope showing signal waveform and amplitude

EIC – DIRC

Tyler Lemon

- Created plots of accelerometer data from shipment, grouping the data by location in crate (i.e., all sensors at the front of the crate) and by measurement axis (i.e., *Y* axis data for movement up and down)
    - ✶ Plots show dampening of vibrations and shocks from exterior of the shipping crate to the barbox



Plot of the trip from SLAC to JLab on April 13, 2024 from 16:47 to 16:53, showing dampening of forces in the back of a crate on truck 1 in the up and down direction. Red trace is the undampened forces on the exterior of the shipping crate. Blue trace is the dampened forces on the interior basket of the shipping crate. Green trace is the further dampened forces on the barbox.

- Designed two-piece bracket for attaching laser interlock control units to walls of laser area
  - ✶ One piece attaches to control unit and slots in to the second, which is attached to the wall
  - ✶ Each bracket has a 45° bevel on the edge that nests into other bracket and uses gravity and a zip tie to hold the pieces in place

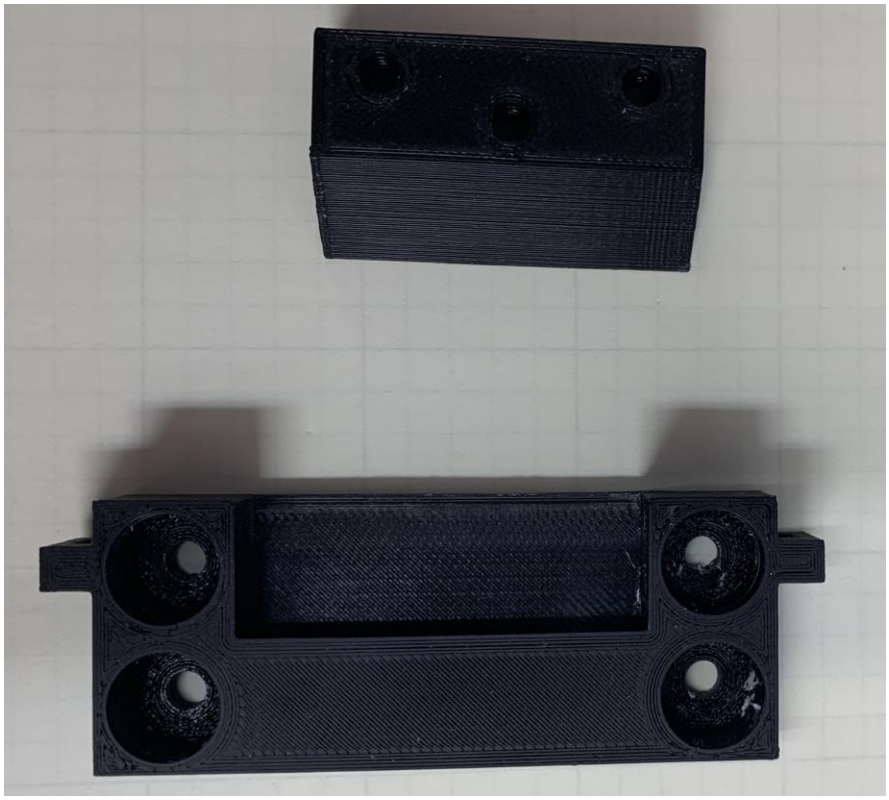


Photo of two-piece bracket designed to hang laser interlock control unit on wall. The top piece is fixed to the control unit. The bottom piece is fixed to the wall.

DSG R&D – Phoebus Test Station

Peter Bonneau, Mindy Leffel, Tyler Lemon, and Marc McMullen

- Designing system software architecture
- Building new Linux SSD
- Documenting the hardware and software design
- Fabricated, labeled, and tested all three 37-pin, D-sub connector-to-ferrule cables
- Started populating 10 humidity temperature sensor boards (HTSB); soldered humidity and temperature sensors

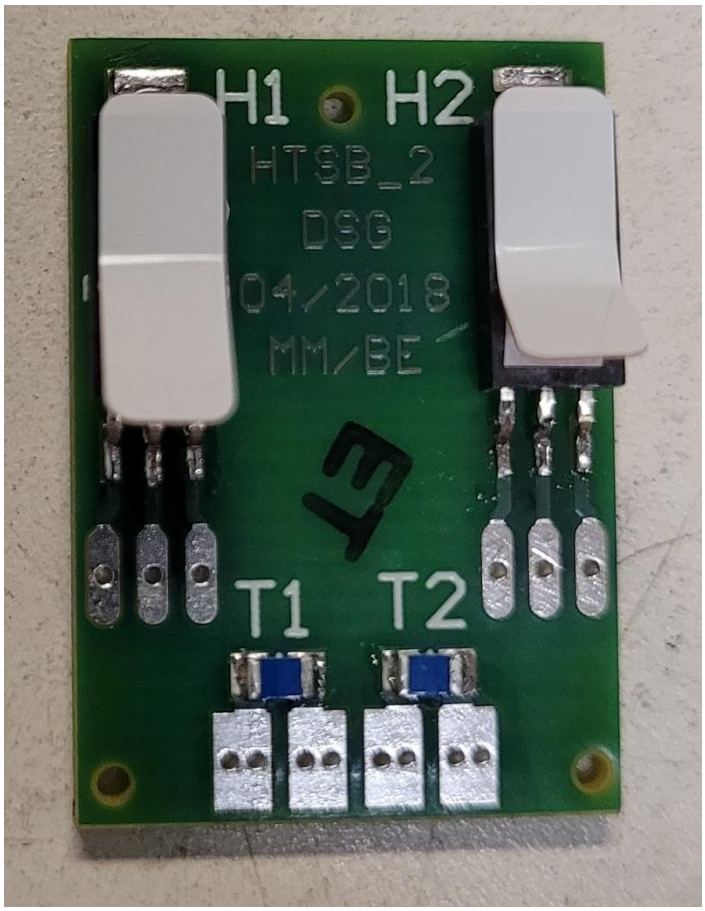


Photo of HTSB with humidity and temperature sensors

- Gathered parts for a duplicate RICH2 interlock chassis; ordered terminal block components
- Modified DIN rail clip design from Thingiverse, Ultimaker's repository of user-created, 3D-printable models, to create a DIN rail bracket for the DC-DC power converter used for the RICH2 interlock chassis

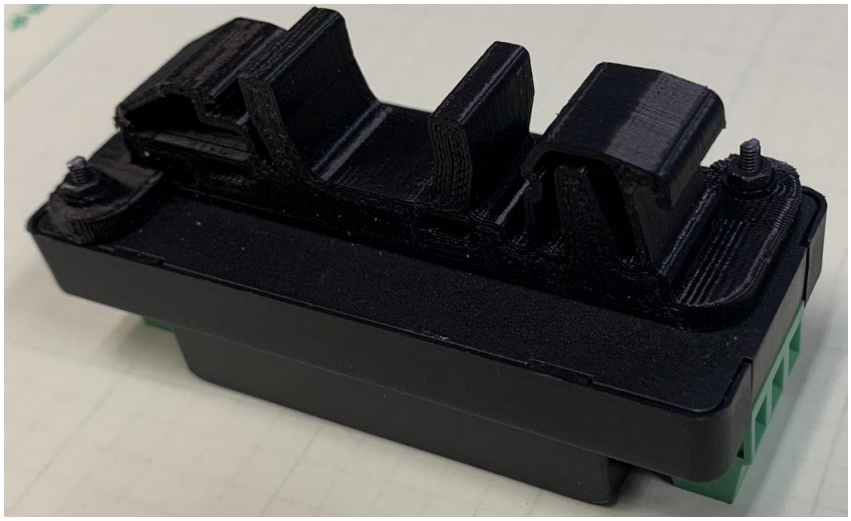


Photo of DC-DC power converter with 3D-printed DIN rail bracket