Detector Support Group

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

Weekly Report, 2021-10-20

Summary

Hall A – ECal

George Jacobs, Mindy Leffel, Marc McMullen

- Developed procedure to verify the viability of the Supermodule frames before assembly

Hall A – SoLID

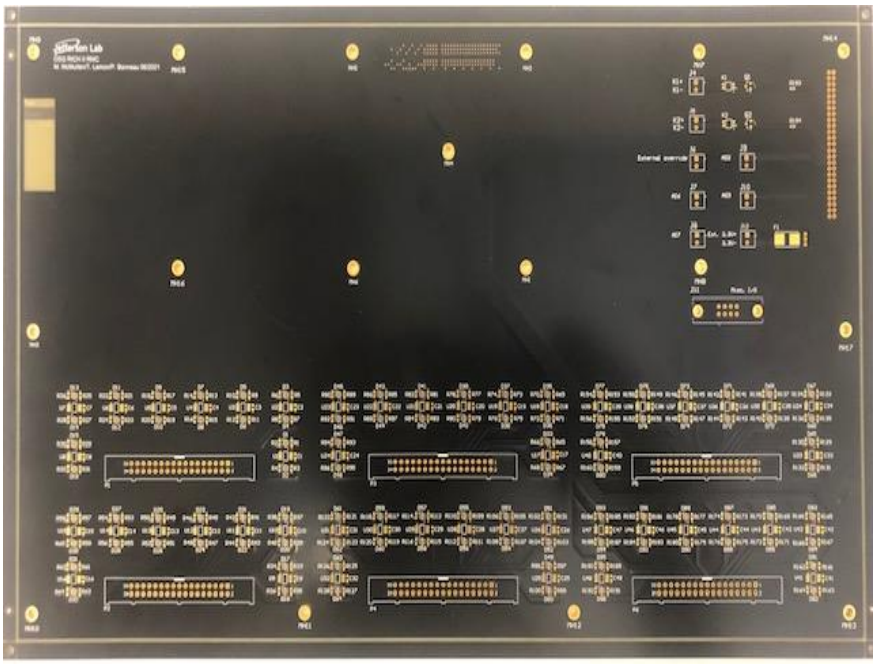
Mary Ann Antonioli, Pablo Campero, Brian Eng, Mindy Leffel, Marc McMullen

- Wiring instrumentation racks for magnet control system
    - ✶ Determined length for each possible intra-rack and inter-rack connection
- Completed drawings: *Power Supply M-panel Connections* and *ASCII Communication System Diagram*
- Cut and terminated ten, 4-conductor ferrule-to-ferrule cables

Hall B – RICH-II

Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, Marc McMullen

- Completed first version of automated d0 DAQ program
    - ✶ Currently, all measurement commands and stage movements have to be performed manually
    - ✶ Program in development uses SSH to execute DAQ commands on Debian Linux PC and a Thorlabs APT interface to control CCD stand stages
- Received unpopulated RMC PCB from manufacturer; tested for shorts and continuity – no issues found

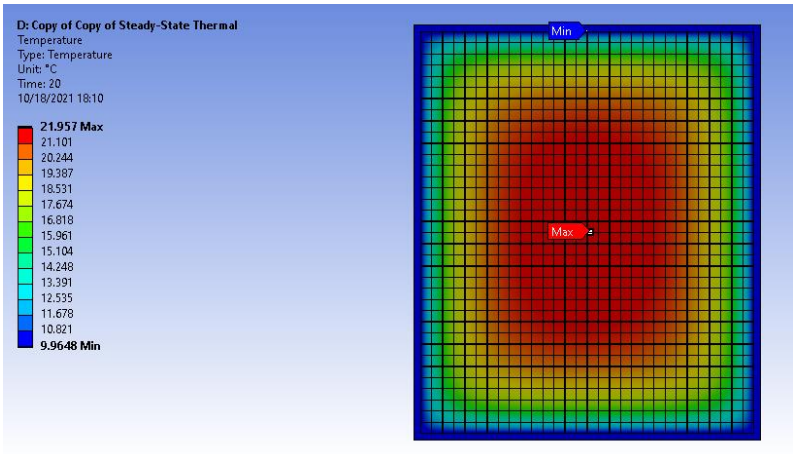


Top view of RICH-II RMC PCB

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen

- Conducted thermal simulation of 36x30 $PbWO_4$ crystal matrix with Cu shell, carbon fiber dividers, and mu metal dividers
  - ✶ Heat load: 3.5 W
  - ✶ Thermal profiles for both front and rear of crystals are identical
  - ✶ Maximum temperature, 21.957°C



Rear face of 36x30 $PbWO_4$ crystal matrix

- Developing Python script to generate quiver and gradient plots of crystal temperatures
- Worked on ESR film pre-shaping – 40 films complete

EIC

Pablo Campero, Brian Eng

- Simulated convection inside Be beam pipe using various temperatures for Ar from 50°C to 200°C
- Simulated convection between the Be beam pipe and the Barrel L1-Sensor

Argon Temp. [°C] (Inside Beryllium Pipe)	Barrel L1 Sensor Inside Surface Temp [°C]	Beryllium Pipe Outside Surface Temp [°C]	Delta Temp [°C]	Heat Generated for Convection inside beryllium pipe [W]	Heat Generated for Convection outside of beryllium pipe [W]	Heat Generated for Convection in the Silicon Sensor [W]
50	30.669	33.845	3.176	17.946	-16.596	-1.3505
100	50.645	60.837	10.192	59.046	-54.618	- 4.462
150	73.643	91.369	17.726	105.98	-97.978	-8.0432
200	97.157	122.66	25.503	154.01	-142.36	-11.705

- Attended OPA status review