Detector Support Group

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

Weekly Report, 2021-07-14

Summary

Hall A – SoLID

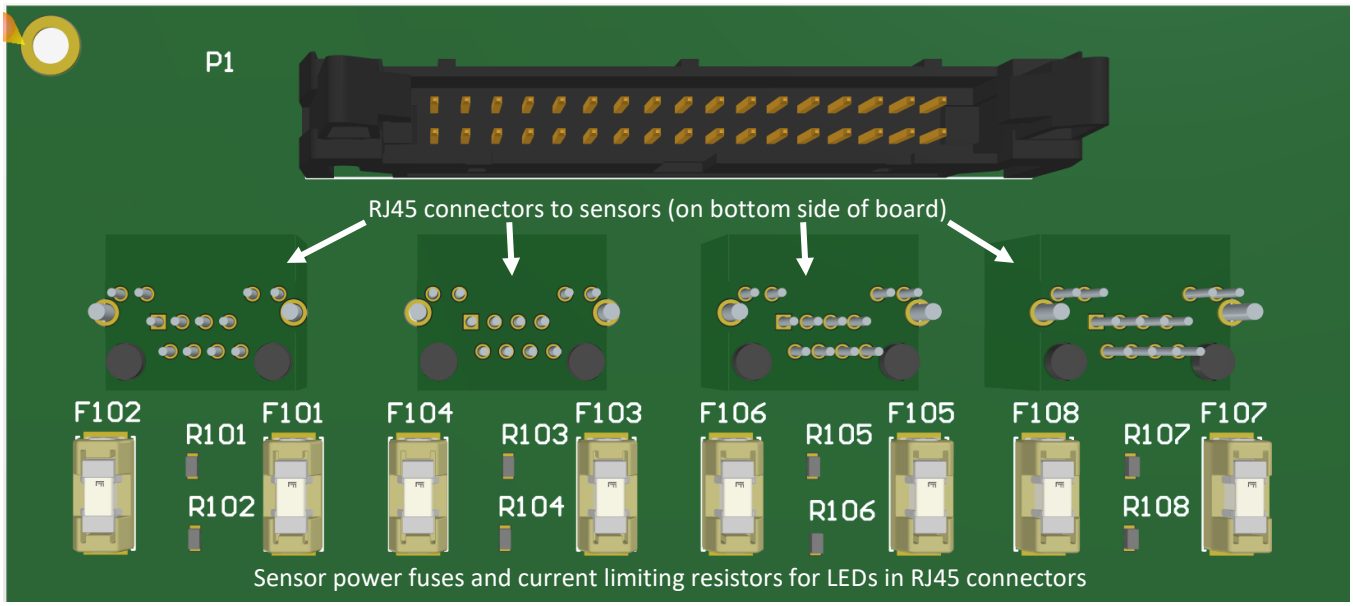
Mary Ann Antonioli, Pablo Campero, Mindy Leffel, Marc McMullen

- Calculated power consumption for the six Dataforth backplanes used for the readout of the temperature sensors
  - ✶ Power consumption: 150 mW per backplane
- Revised AutoCAD drawings A00000-16-03-210, *-0211, *-0212, *-0213, *-0214, *-0402, and *-0406
- Updated *Cable List* spreadsheet
  - ✶ Added cables required to connect voltage taps, LVDT, and motor drive valve signals

Hall B – RICH-II

Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Tyler Lemon

- Developing communication interface between hardware interlock system's sbRIO card and the expansion chassis by either a USB connection and/or local Ethernet connection
  - ✶ Setup enables hardware interlock system to maintain its ability to function without network connection
- Opened and moved planar mirrors to cleanroom
- Started set up of d0 test station for measurements of spherical mirrors
- Developing air cooling diagram and components list
- Developing backplane PCB – started placing components

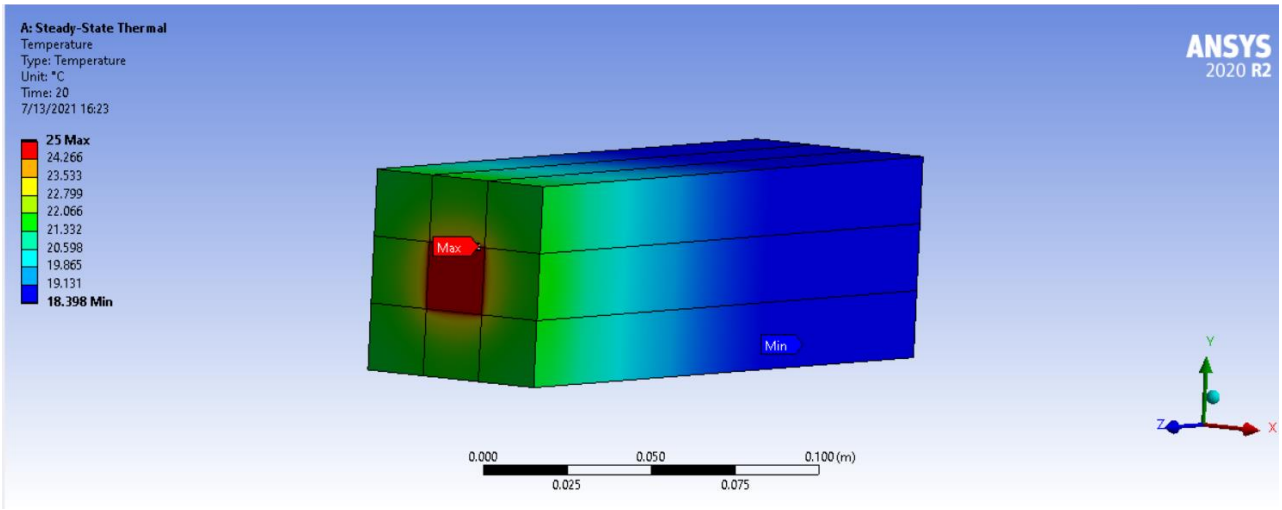


First header group of Backplane PCB

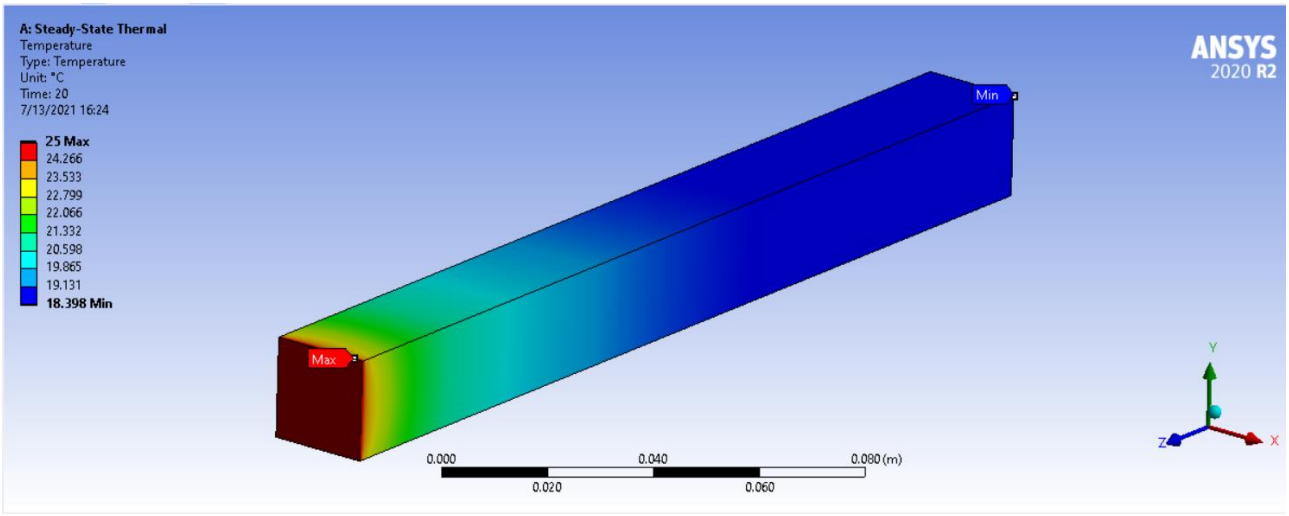
Hall C – NPS

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

- Using Ansys, conducted a thermal analysis of a 3x3 block of $PbWO_4$ crystals
  - ✶ Thermal conductivity of 2.4 $W \cdot m^{-1}K^{-1}$ (*x*- and *y*-axes) and 2.0 $W \cdot m^{-1}K^{-1}$ (*z*-axis)
  - ✶ A temperature of 25°C was applied to the front of the central crystal



Screenshot of Ansys thermal simulation of 3x3 block of crystals; temperature of 25°C applied to central crystal



Screenshot of central crystal from Ansys thermal simulation with 25°C applied to front face

- Revised LabVIEW front panel: crystal zone temperatures (front and back) tabs
  - ✶ Replaced all over/under limit LED indicators with a single LED indicator that changes color with set limits
- Long-term load testing of HV supply cables: 38 cables complete
- Repaired 18 wires for HV supply cables

- Researching hot glue to use for potting the Radiall 52-pin connectors for the HV supply cables; will be needed if CAEN is unable to provide the glue they use for potting

EIC

Brian Eng

- Working with Science Undergraduate Laboratory Internship (SULI) high school students on work in SketchUp, mostly on the silicon tracking detectors