Detector Support Group

Weekly Report, 2023-10-24

Hall A – ECAL
Brian Eng, Mindy Leffel, and Marc McMullen

- Added controls software GUI to an accessible directory (O:/sbs/ECAL) for Hall A users
- Ordered fuses for five channels of the test stand
- Requested LabVIEW license from Kelvin Edwards for the new Hall A ECAL computer
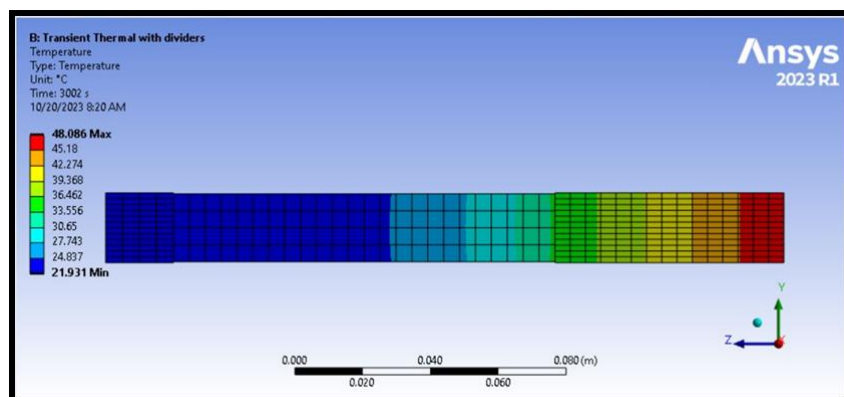
Hall A – Moller
Brian Eng

- Updated Excel file of MPS commands
  - ✶ Included new JLab-specific firmware modifications
  - ✶ Added fault bits sheet and NAK ("not acknowledged") sheet

Hall C – NPS
Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen

- Created two clusters (All Keysight Values and Sensor Enables) to be used in new version of LabVIEW program
- Recovered Keysight mainframe after communication failure on 2023-10-21
  - ✶ https://logbooks.jlab.org/entry/4204682
  - ✶ Submitted PR for remote power controller, which will enable the remote control of the Keysight mainframe in case this situation happens again
  - ✶ Contacted Keysight to assist in debugging communication failure
- Attempting to update meshing of crystal array model using Ansys Mechanical Transient Thermal
  - ✶ Meshing stalls at 5%
  - ✶ Contacted Ansys; awaiting reply
- Created model with one crystal and dividers for Ansys Mechanical Transient Thermal analysis
  - ✶ Model retains five regions of the crystal—under carbon fiber divider, under mu-metal divider, air around crystal between dividers, front face, and rear face
  - ✶ Ran thermal simulation with internal heat generation of $7.5e5$ W/m^3 in the thin slice volume and convection on six walls—front, back and air region (four walls)
    - Maximum temperature of ~48°C

Hall D – FCAL2
Mindy Leffel

- Populated 40 PMT bases; 705/1750 completed

Hall D – PXI
Brian Eng

- NI TimeSync now requires a hardware module, so it no long works with PTP server; current chassis has no empty slots
  - ✶ NI support suggested using Linux PTP software (ptp4l), but does not work properly; for temporary workaround, returned to using NTP

EIC - DIRC
Peter Bonneau, Mindy Leffel, George Jacobs, Tyler Lemon, and Marc McMullen

- Followed up on the fresh-air intake for the laser lab; Facilities Management is checking on system requirements (flow rate of AC unit, size of room, etc.)
- Continued component placement on the data acquisition PCB
  - ✶ Changed op-amps, resistors, and capacitors to through-hole versions
- Reviewed DAQ schematic and PCB design to ensure proper mating between Arduino and PCB; made layout of the Arduino header
- Created a wiring diagram for cRIO chassis that will be used during Phoebus alarm handler test; started preparing chassis for population
- Developed code to support monitoring of the EPICS PVs by the Phoebus alarm server
- Coordinated with Shoreline Industries, Inc. for assembly of missing wooden braces for shipping crates
- Compiling list of items still needed for shipping crates

Item	Total Needed	Details
Short support brackets	60	Ordered from Shoreline Industries, Inc.; expected 10/26/2023
Long support brackets	60	Ordered from Shoreline Industries, Inc.; expected 10/26/2023
Foam sheets	25	Ordered from McMaster-Carr; 12 expected 10/25/2023, 13 expected 12/7/2023
air spring	72	Part selected; waiting on confirmation from collaborators before ordering
draw latches	?	Part selected; waiting on confirmation from collaborators before ordering
extension dampers	24	Part selected; waiting on confirmation from collaborators before ordering
vertical air spring bracket	18	Need information on brackets
horizontal air spring bracket	36	Need information on brackets
extension damper brackets	24	Need information on brackets
check valve	72	Waiting to finalize air-suspension design
pressure gauge	12	Waiting to finalize air-suspension design
¼" OD tubing	?	Waiting to finalize air-suspension design
¼" OD fittings	?	Waiting to finalize air-suspension design

EIC RICH
Tyler Lemon

- Investigated integrating spheres for UV reflectivity test station
  - ✶ Integrating sphere can replace re-collector lens assembly, helping to eliminate errors from system misalignment
  - ✶ Investigating how to couple integrating sphere with optical fiber

EIC – Beampipe Thermal Test

Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen

- Created internal volume for the air thermal effect
- Created inlet and outlet regions for the air volume inside the beampipe
- Completed mesh for model; generated two layers for the beryllium
    - ✦ Total number of cells ~4 million
- Set up materials and boundary conditions
- Added three layers of insulation—80 µm of polyimide, 0.1 µm of aluminum, and 80 µm of aerogel

DSG

Peter Bonneau and Aaron Brown

- Worked on JavaScript code to add to website the search capability of all documents
- Revised code for the navigation bar on all webpages