Detector Support Group

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

Weekly Report, 2022-08-10

Summary

Hall A – ECal

George Jacobs, Mindy Leffel, Tyler Lemon, and Marc McMullen

- Conducting steady-state thermal analysis for heating a supermodule using thermal tape on its endplate
  - ✶ Modifying steady-state thermal model for heating a supermodule using thermal tape on its end plate – very thin (0.005 mm) aluminum light guides is causing problems with meshing; suppressing these aluminum parts allowed all other items to be meshed, but still investigating alternate meshing strategy for thin bodies
  - ✶ Set up convection as stagnant air for all parts
  - ✶ Applied heat flux of 830 W across end plate of supermodule to represent heat tape
  - ✶ Issues when creating solution
    - Solution either times out with message stating that there is not enough memory for operation or Ansys freezes during the solution
    - Investigating methods of simplifying/improving meshing to see if that resolves the issues
- Developing, using NX12, a short (SM2) supermodule model for use in Ansys thermal analysis

Hall A – GEn-II

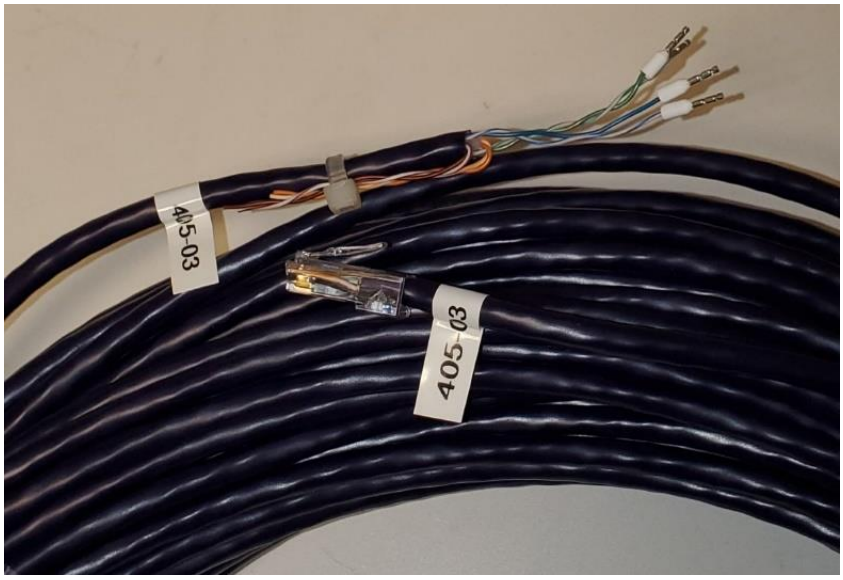
Mindy Leffel

- Fabricated and tested five twisted-pair RTD cables

Hall A – SoLID

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

- Fabricated a vacuum gauge cable with ferrules and an RJ45 connector



Vacuum gauge cable with ferrules and RJ45 connector

Hall C – NPS

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

- Developing *Main Menu* Phoebus screen for high voltage controls & monitoring screens on Hall C *cdaql3* computer
  - ✶ Adding action button widgets to open *Overview* and *Hall C NPS* high voltage monitoring & controls screens in a new window

Hall D – JEF

Aaron Brown, George Jacobs, and Mindy Leffel

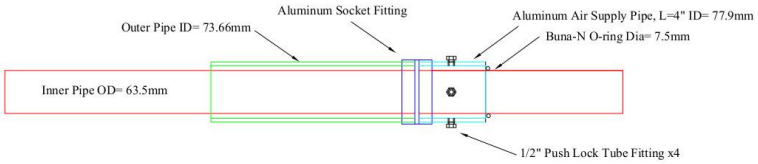
- Glued 25 light guides to PMTs

EIC

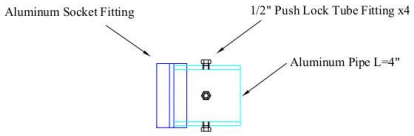
Mary Ann Antonioli, Pablo Campero, and Brian Eng

- Developing beam pipe mockup station
  - ✶ Air supply – calculated gas flow rate corresponding to a flow velocity of 5 m/s
  - ✶ Designed an Air Supply Adapter for test setup

EIC Beamline Thermal Test Concept Air Supply Setup

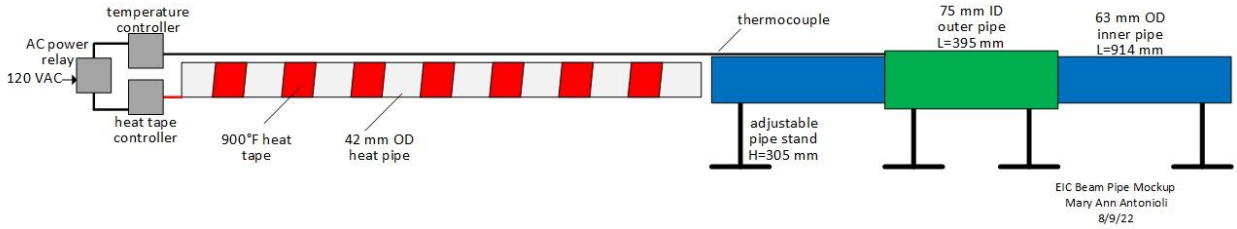


EIC Beamline Thermal Test Concept Air Supply Adapter



AutoCAD drawing of air supply setup and adapter

- Completed Visio drawing of beam pipe mockup station



Visio drawing of EIC beam pipe mockup test station

DSG R&D – EPICS Alarm Test Station

Peter Bonneau

- Developing a high process variable (PV) channel count softIOC for the Phoebus alarm test system
  - ✶ Design expands on the softIOC used to initially test the three Kafka message streams used in the Phoebus alarm system
  - ✶ A high channel count for the alarm server and Kafka streams is needed to properly simulate an active detector system
  - ✶ The high channel count softIOC will simulate the PV signals from the DSG Hardware Interlock System for NPS

DSG R&D – PXI

Peter Bonneau and Tyler Lemon

- Developing program to read analog voltage inputs at 200 MHz rate on one FPGA module and stream data to second FPGA module that reads two samples at 100 MHz