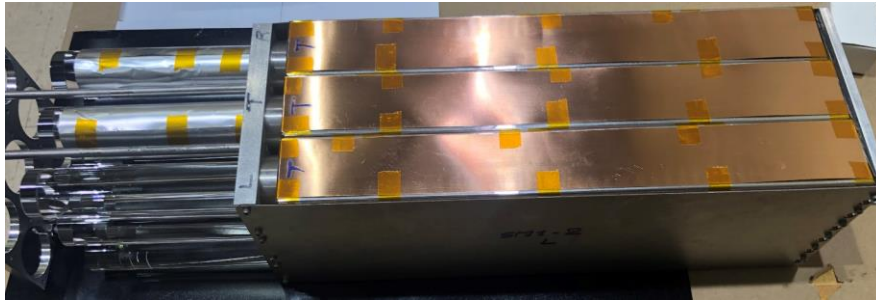# Detector Support Group

Summary

Hall A – ECal
Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, and Marc McMullen

- Supermodule assembly demonstration

Assembled Supermodule

Hall A – SoLID
Mary Ann Antonioli, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen

- Wiring instrumentation racks for magnet control system
  - ✦ Rack #1 – 30% complete; PLC rack – 50% complete
  - ✦ Added terminal group markers and labels
- Updated *Cable Information* spreadsheet
  - ✦ Added information for 20 cables: cable lengths, stripping lengths, labels, and cable termination (for both ends)
- Cut and stripped 20, 4-conductor ferrule-to-ferrule cables
- Completed drawings: *Remote A – PLC Chassis Layout* and *Remote B – PLC Chassis Layout*
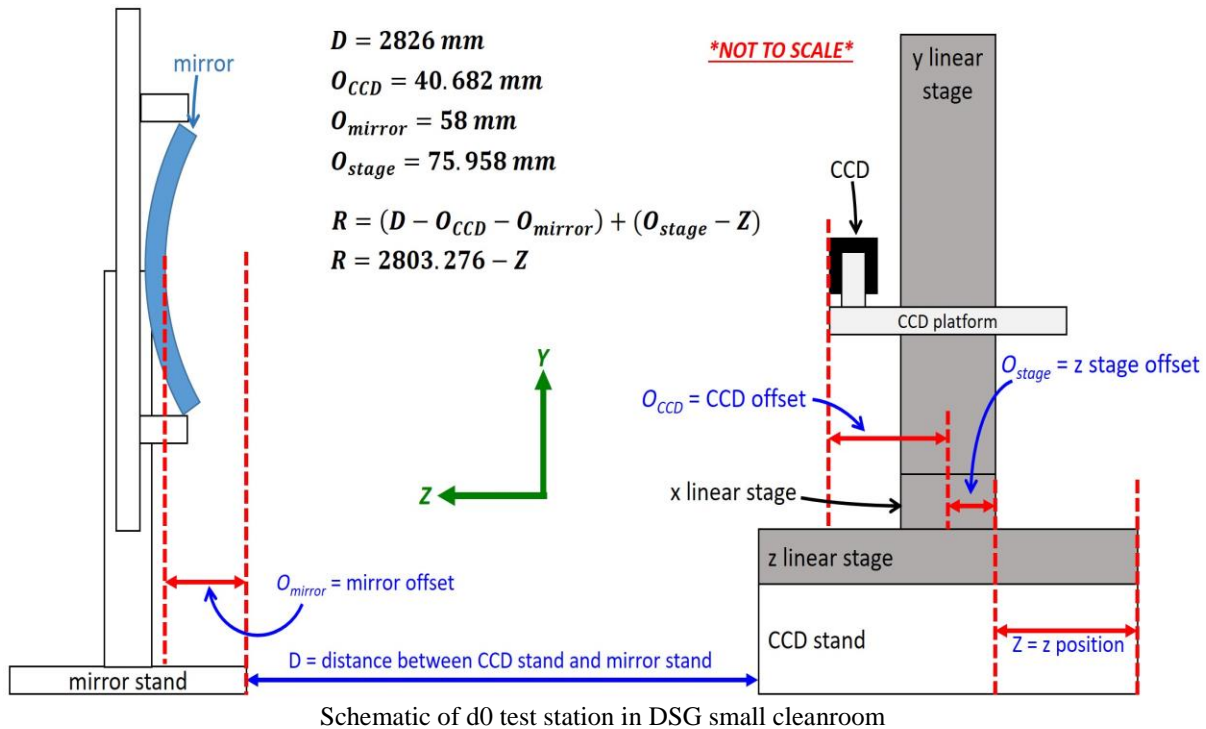
Hall B – RICH-II
Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, and Marc McMullen

- Developed shell script to acquire background measurement from CCD every minute for one hour with 0.5 ms and 975 ms exposure times
  - ✦ 0.5 ms exposure is the time used for d0 measurements
  - ✦ 975 ms exposure is longest possible time using "Ximea-shot" command
  - ✦ Data analysis in progress
- Created schematic of d0 test station; need to verify relationship between components for offset measurements

$$D = 2826 \ mm$$
$$O_{CCD} = 40.682 \ mm$$
$$O_{mirror} = 58 \ mm$$
$$O_{stage} = 75.958 \ mm$$

$$R = (D - O_{CCD} - O_{mirror}) + (O_{stage} - Z)$$
$$R = 2803.276 - Z$$

NOT TO SCALE

y linear stage

mirror

CCD

O_{CCD} = CCD offset

O_{stage} = z stage offset

CCD platform

x linear stage

z linear stage

CCD stand

O_{mirror} = mirror offset

Z = z position

D = distance between CCD stand and mirror stand

mirror stand

Schematic of d0 test station in DSG small cleanroom

- Received Backplane PCB – testing for continuity and shorts
- Submitted RICH assembly OSP for subject matter expert (SME) review
  - ✶ Materials Handling SME response – no issues
  - ✶ Emergency Coordinator response – provided additional verbiage for submission for standard safety protocols at JLab for emergencies such as loss of power, fire, or spills

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

- Researching conducting Ansys thermal simulations and exporting results using Python scripting
  - ✶ Ansys uses IronPython as scripting language
    - ▪ Simulations can be run via Python script and results can be exported to text or CSV files
- Placed 56 temperature probes (front) on 36x30 $PbWO_4$ crystal array model
  - ✶ Able to export results of all 56 probes to an Excel file
- Researching communication with Keysight mainframe via Python script
  - ✶ Using web interface to check results of commands issued with Python – "*IDN?" command gives same result, but FETCH and MEASURE commands give different results
- Researching J-Connector for MariaDB as possible way to connect to database through DSG webpage – allows connection to MariaDB database for Java based applications
- Worked on ESR film pre-shaping – 160 of ~600 films completed

EIC
Pablo Campero, Brian Eng

- Conducted, using Ansys, static thermal simulations of modified Be beam pipe, Barrel L1 Si Sensor, and Barrel L1 PEEK Rings with various Ar temperatures
  - ✶ Distances of separation between Be beam pipe and Barrel L1 Si Sensor: 5 mm and 2 mm
  - ✶ Results indicate that temperature for inner face of the Barrel L1 Si Sensor remained at 22°C (ambient temperature) for both distances
  - ✶ Investigating cause of unchanged temperature for Barrel L1 Si Sensor
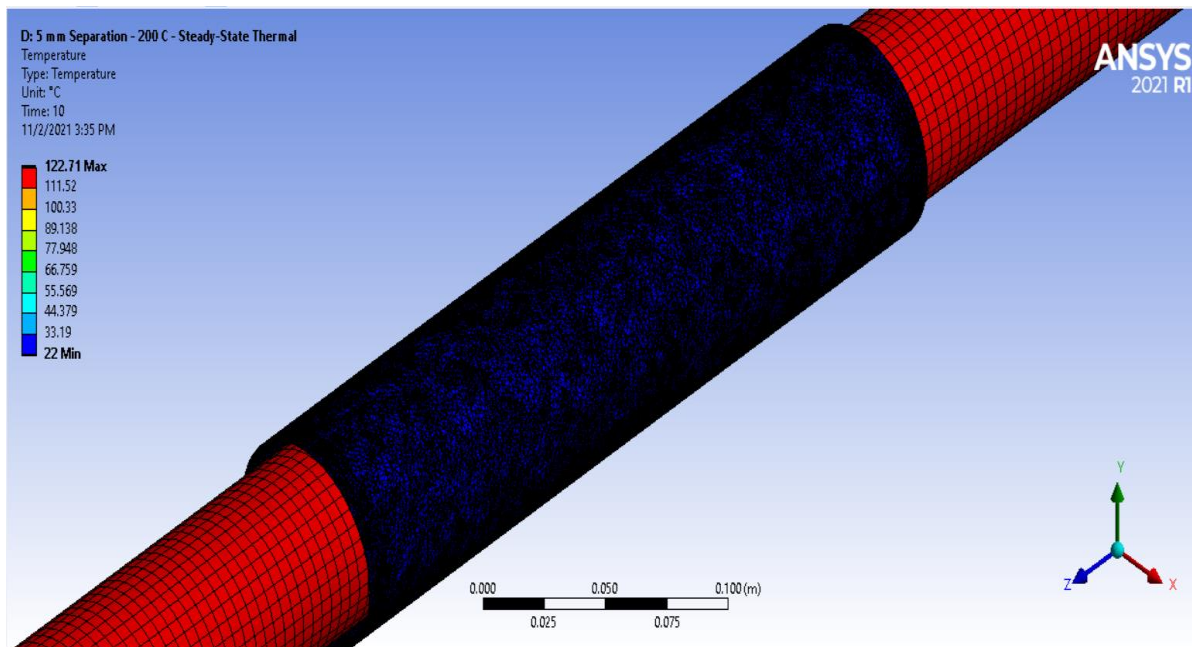
Screenshot of Ansys thermal simulation result; Barrel L1 Si Sensor (colored blue) shown at 22°C – no thermal effect from the Be beam pipe shown at 122°C

- Attended ATHENA Tracking meeting: simulation results using different software tools close to converging

DSG R&D – EPICS Alarm Handler
Peter Bonneau

- Working on EPICS alarm system
  - ✶ Alarm server and user interface

DSG R&D – GEM
Brian Eng

- Experimenting with PID in Python to control proportional valve using *Simple-PID* package – requires manual tuning of parameters
  - ✶ Investigating a set of PID values that work for all flow values

DSG – Safety
Marc McMullen

- Met with facilities management, industrial hygiene, physics management, and the flooring vendor to discuss mitigation of fumes caused by the final step of the cleanroom floor project
    - ✶ EEL building will be closed from 6 PM to 6 AM from 11/5 to 11/8 to allow fumes caused by the finishing chemicals to exhaust

Day two progress of EEL cleanroom floor project