Hall A ECAL
Marc McMullen
- Continued tuning PID for temperature setpoints to stabilize the heater current
  - ✶ Used controls software to try different combinations of PID settings to find which settings reduced the oscillation of the output of the power supply
  - ✶ Setting the P (Proportional Gain) to 0.6 and the I (Integral Gain) to 1.6 reduced the oscillation at 250°C

Hall A - GEp
Mindy Leffel
- Completed two high voltage boxes; all 22 completed
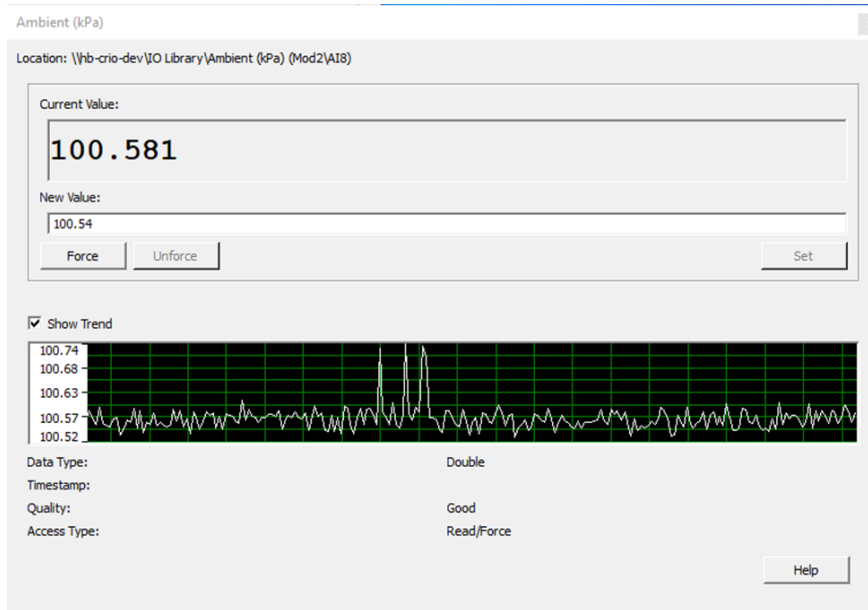
Hall A – Moller
Brian Eng
- Continued developing Python script to exercise remote command functionality of MPS
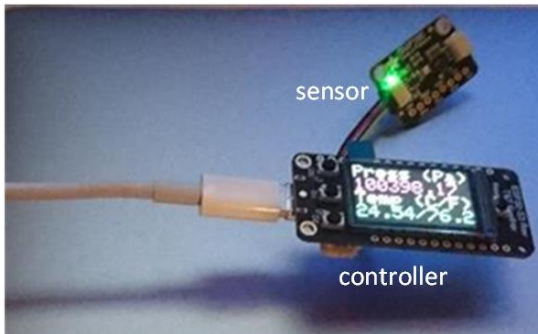 - ✶ Adding read commands that have optional parameters

Hall B – Gas System
Brian Eng
- Testing Dwyer pressure transmitter (0–30 psia) to use as additional ambient pressure sensors
  - ✶ When connected to cRIO module 9219, reading does not appear stable; generally ~100 Pa, but occasionally spikes to ~200 Pa

- Trying a similar microcontroller setup as the Hall A field mapping units, an ESP32 SoC (system on a chip) controller communicating via I2C to a sensor (Bosch BMP390)

  ✶ No need to try to save power since will not use a battery
  ✶ Possible methods to get data from sensors into an EPICS PV
    ▪ MQTT (not an acronym) protocol to send data works with a public broker (a server), shown below; stable readings compared to the Dwyer (however this was with 16X oversampling enabled on the sensor)
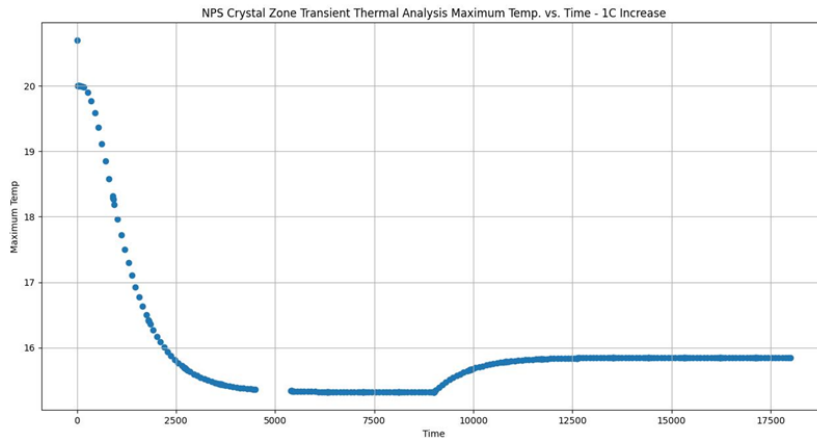
- Host a webserver and pull data that way?

Hall C – NPS

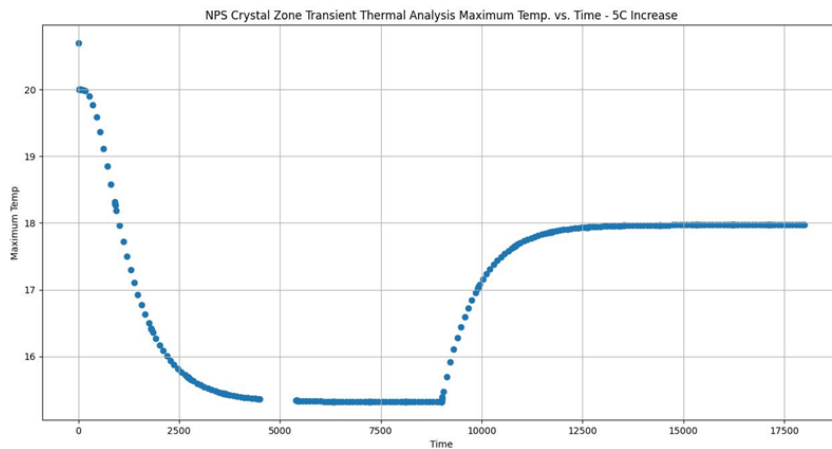*Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen*

- Rewrote code to change formatting of text file produced by save/restore Python program
  - ✦ Constrained all values to two decimal places
  - ✦ PV name and value separated by tab and comma

```
hchv30:00:001:SVMax      ,880.00
hchv30:00:001:V0Set      ,800.00
hchv30:00:001:RDWn       ,50.00
hchv30:00:001:RUp        ,50.00
hchv30:00:001:I0Set      ,400.00
hchv30:00:001:Trip       ,0.10
hchv30:00:002:SVMax      ,825.00
hchv30:00:002:V0Set      ,800.00
hchv30:00:002:RDWn       ,50.00
hchv30:00:002:RUp        ,50.00
hchv30:00:002:I0Set      ,400.00
hchv30:00:002:Trip       ,0.10
```
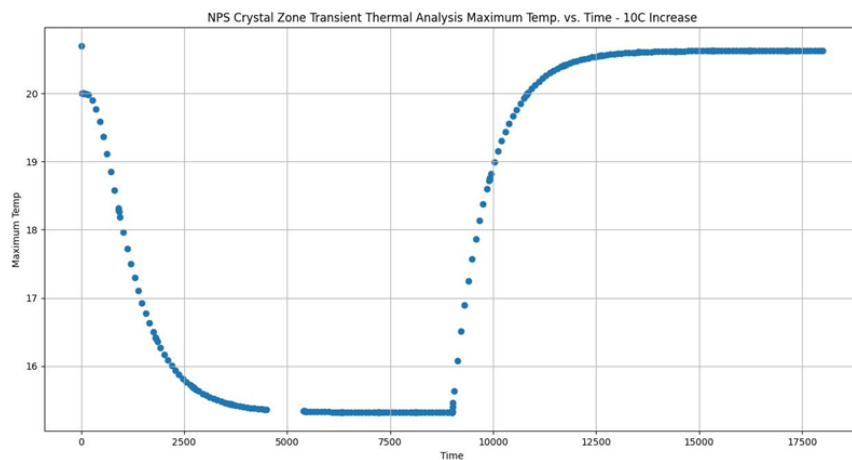
- Ran three Ansys transient thermal simulations on NPS crystal array, one increasing the ambient temperature by 1°C in the span of 1 second, one increasing by 5°C, and the third by 10°C
  - ✦ The goal of the simulations was to determine how long it would take for the system to reach thermal equilibrium and what the maximum temperature would be once thermal equilibrium was reached

Plot of maximum temperature vs. time in seconds for NPS crystal array when the ambient temperature is increased by 1°C

Plot of maximum temperature vs. time in seconds for NPS crystal array when the ambient temperature is increased by 5°C

Plot of maximum temperature vs. time in seconds for NPS crystal array when the ambient temperature is increased by 10°C

- In LabVIEW program, broke out 28 LabVIEW array shared variables into individual variables and built individual variables into 52 LabVIEW array shared variables, using loops
- Fabricated two relay cables, ferrule to ferrule, and one serial cable, D-sub to D-sub
  - ✶ All cables fabricated

Hall D – JEF
Mindy Leffel
- Wrapped six crystals with 3M foil and Tedlar; 794 wrapped to date
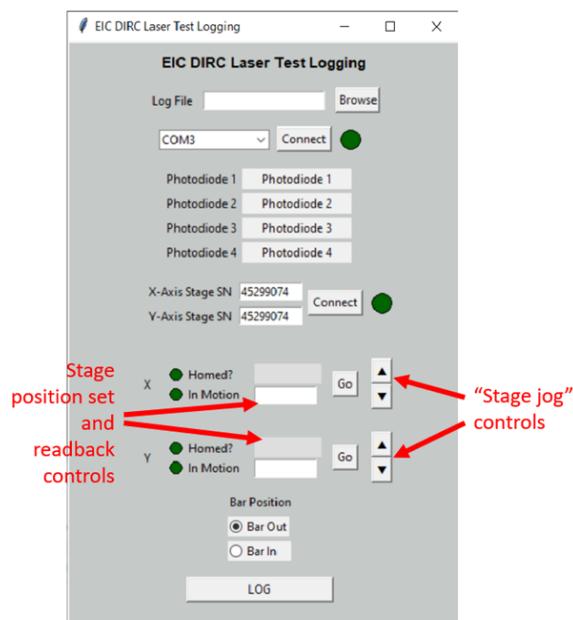- Populated 10 PMT bases; 380 of 1200 completed

EIC
Brian Eng
- Current tracker layout adds barrel MPGD layers, one before the ToF and one before the DIRC, along with two disk layers after the silicon layers

EIC - DIRC
Peter Bonneau, Tyler Lemon, and Marc McMullen
- Reviewing laser interlock PCB design
- Added linear stage controls to the Python user interface program, allowing user to:
  - ✶ Check if each stage has been homed
  - ✶ Check if a stage is in motion
  - ✶ Read the stage's current position
  - ✶ Set the position the stage should go to
  - ✶ Use up and down arrows to jog the stage (move the stage in set increments)

- Detector components expected September 2023

EIC – RICH
Tyler Lemon

- Tested compact CCD spectrometer (CCS) capabilities of measuring wavelengths around 200 nm
  - ✦ Test used the reflectivity test station's quartz-tungsten halogen (QTH) lamp and a separate deuterium lamp
    - Deuterium lamp is better suited to UV measurements than QTH lamp
    - CCS can read down to ~193 nm. If lower wavelength needed, a different measurement device must be used
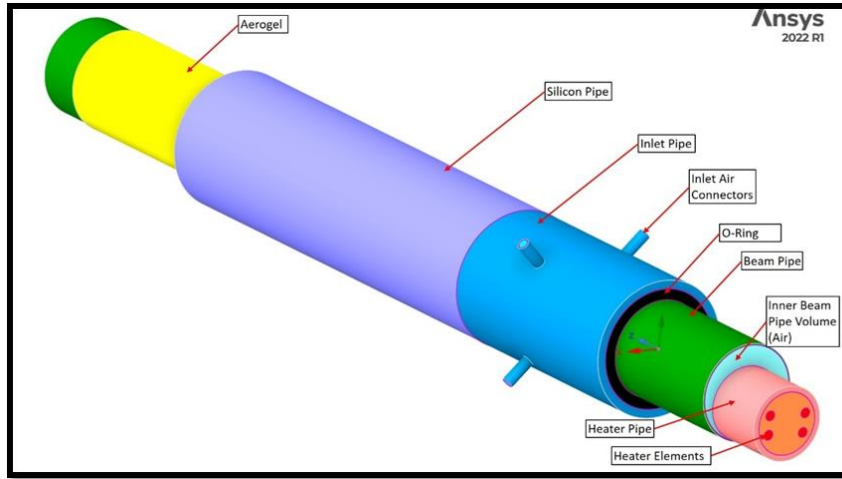
EIC - Thermal Test Stand
Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen

- Re-assembled test stand with new inner pipe and gold reflector
- Refilled heater with oil, checked for leaks
- Added an RTD on the downstream end of the simulated beampipe to allow measurements at both ends of the pipe
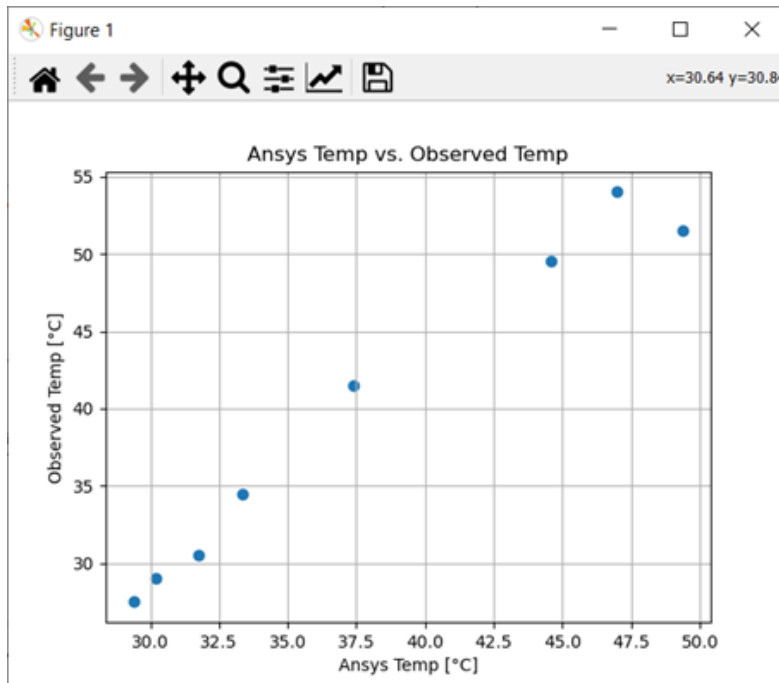- Re-insulated test stand

- Working on test stand simulation
  - ✶ Modified heater and corrected model interferences

Model of test stand

- ✶ Wrote Python code to analyze data acquired from the test stand and Ansys results
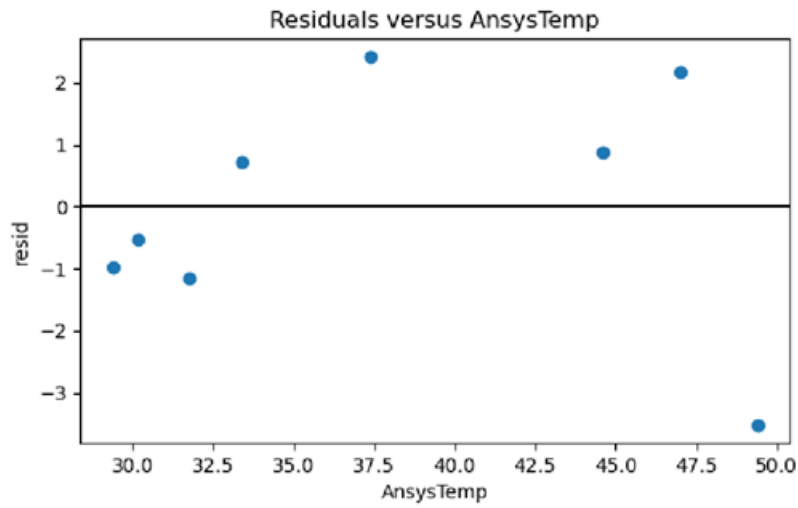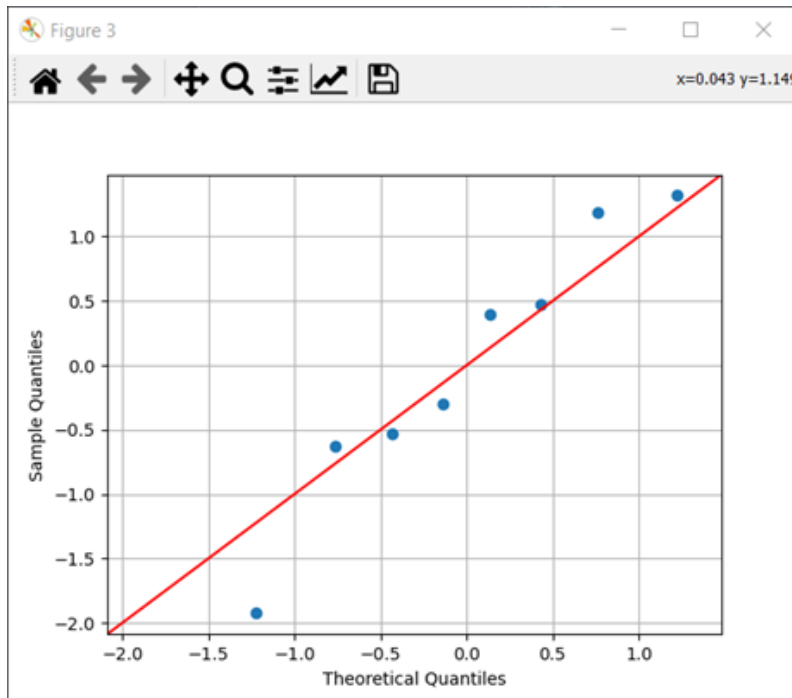

Linear regression plot

Residual plot

Q-Q plot