DSG-NPS R&D Meeting Minutes

Date: February 21, 2023
Time: 02:00PM – 03:00PM

Attendees: Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, and Amrit Yegneswaran

1. **Thermal readback errors**
   Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, and Tyler Lemon
   1. Discussed how to handle Keysight multiplexer readback errors
      - Will need to review Keysight manual to determine which errors require user intervention to clear; LabVIEW code will be modified to check for these error codes
      - For those errors that require user intervention, details on how to handle them will be provided in troubleshooting guide

2. **Hardware**
   Aaron Brown and Marc McMullen
   1. A LabVIEW program was developed to test if the added length of the Keysight extension cable affects the voltage reading of the K-type thermocouples (and therefore the temperature reading)
      - Took 500 data points with the manufacturer's D-sub cable (black) and 500 data points with the manufacturer's cable plus the extension cable (red)
      - Test will be repeated with ~150,000 data points for each configuration
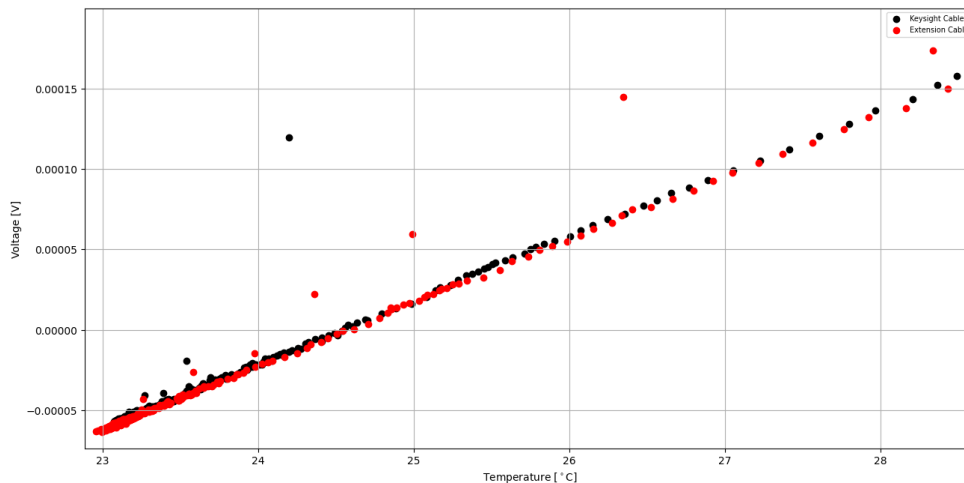
Plot of K-type thermocouple voltage vs temperature

3. **High voltage controls**
   Aaron Brown
   1. Debugging high voltage settings Python program
      - Instead of *caput* Channel Access command, using the *caput_many,* which uses the parameter "wait='each'" to force the *caput_many* command to wait until each PV has received the command before moving to next PV

```
if v0set:
    for i in range(14):
        a = []
        A = []
        for j in range(36):
            pfix = "hchv20:"+mod[i]+":0"+chans[j]+prefix2
            prefix = "hchv21:"+mod[i]+":0"+chans[j]+prefix2
            a.append(pfix)
            A.append(prefix)
        #print(a)
        #print(caget_many(a))
        b = [v0set] * len(a)
        val = caput_many(a,b,wait='each')
        val = caput_many(a,b,wait='each')
        b = [v0set] * len(A)
        val2 = caput_many(A,b,wait='each')
        val2 = caput_many(A,b,wait='each')
        print(caget_many(a))
        print(caget_many(A))
```

Screenshot of high voltage settings Python program code

- Program takes about 2 minutes for one parameter
- Need to call the *caput_many* command twice for all channels to receive the command; may need to contact CAEN technical support
- Will use GECO2020 to verify the setpoints