

DSG-NPS R&D Meeting Minutes

Date: June 29, 2021

Time: 11:00AM – 12:10 PM

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

1. Hardware interlock system development

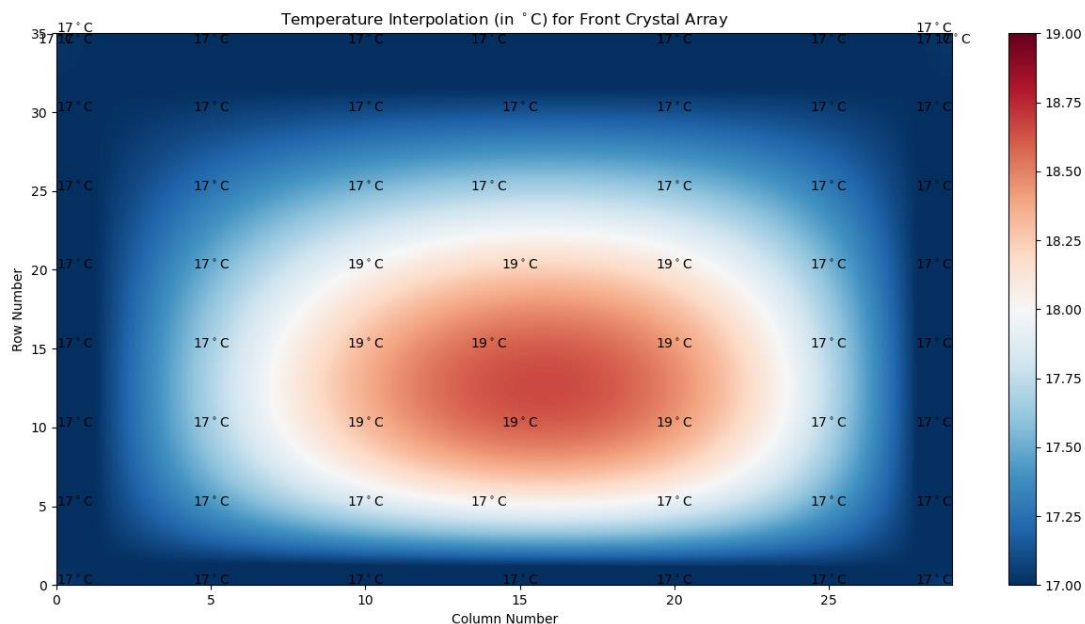
Mary Ann Antonioli, Peter Bonneau, and Aaron Brown

1. Reviewed progress on the LabVIEW front panel Mary Ann Antonioli is developing for the hardware monitoring system program
 - A new plot will be added showing the temperature difference between the front crystal zone and the back crystal zone
 - Indicators will be added to the *Plots* tab for averages of all 56 average temperatures for both the front and back of the crystal zone, as well as the standard deviations
2. Discussed quantity of temperature sensors to be used for the crystal and electronics zones' cooling circuits
 - Crystal zone cooling circuit will have four (two each for the input and the output manifolds)
 - Electronics zone cooling circuit will have eight (two each for the input and the output manifolds and two each for the top and the bottom heat exchangers)
3. Reviewed list of CSS-BOY screens that have been developed for the control and monitoring of the CAEN HV system; more screens will be developed

2. Thermal analysis and ANSYS simulation

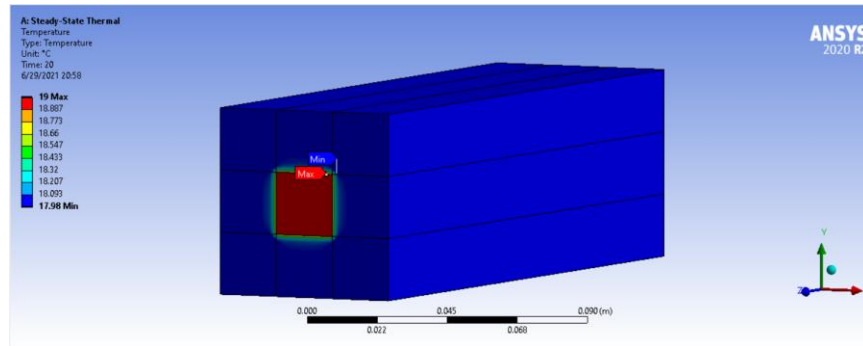
Aaron Brown

1. Testing the Python interpolation package - reviewed spline interpolation plots for front crystal zone temperatures

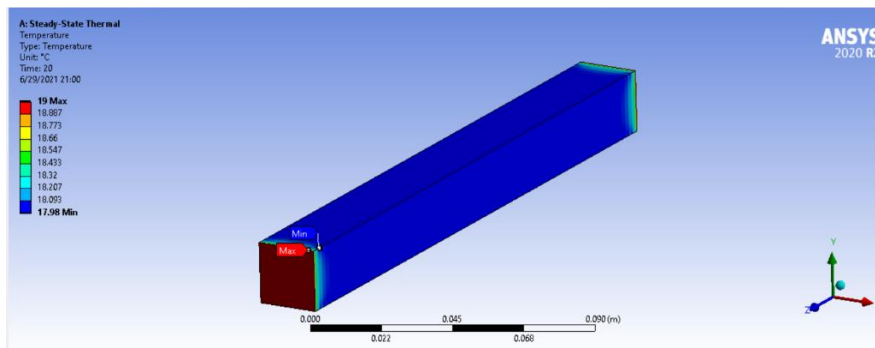


Plot of Python spline interpolation where a 3x3 central block of temperature sensors have been set to 19°C

- A central, 3x3 block of temperature values are set to 19° C and all other temperature values are set to 17° C
 - A contour plot will be generated from the same data
2. Reviewed ANSYS thermal simulation of 3x3 block of PbWO₄ crystals
- A temperature of 19° C was applied to the front and rear of the central crystal



Screenshot of ANSYS thermal simulation of 3x3 block of PbWO₄ crystals

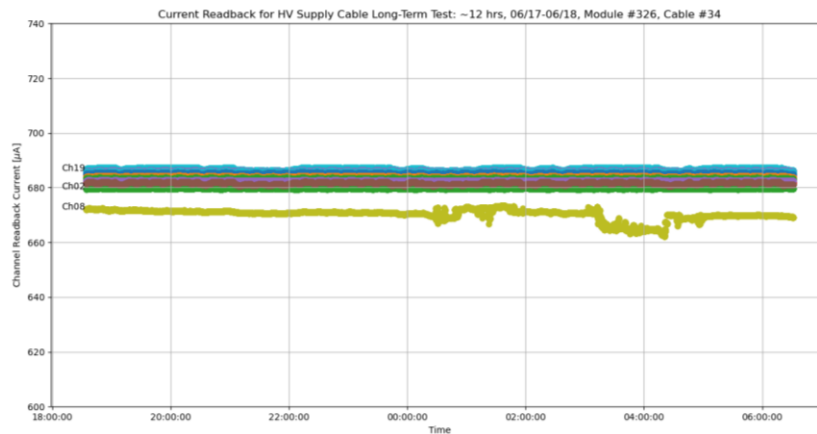


Screenshot of ANSYS thermal simulation of 3x3 block of PbWO₄ crystal (central crystal)

3. HV supply cable testing

Peter Bonneau, Aaron Brown, Brian Eng, George Jacobs, Mindy Leffel, and Marc McMullen

1. Long-term cable testing, with load, in progress
 - Channel #8 of cable #34 has an unstable readback current that is well below the other channels; cable will be retested



Plot of long-term testing of HV supply cable #34