DSG NPS Collaborators' Meeting Update

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Detector Support Group
August 26, 2021

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- CAEN High Voltage Crate Interlock
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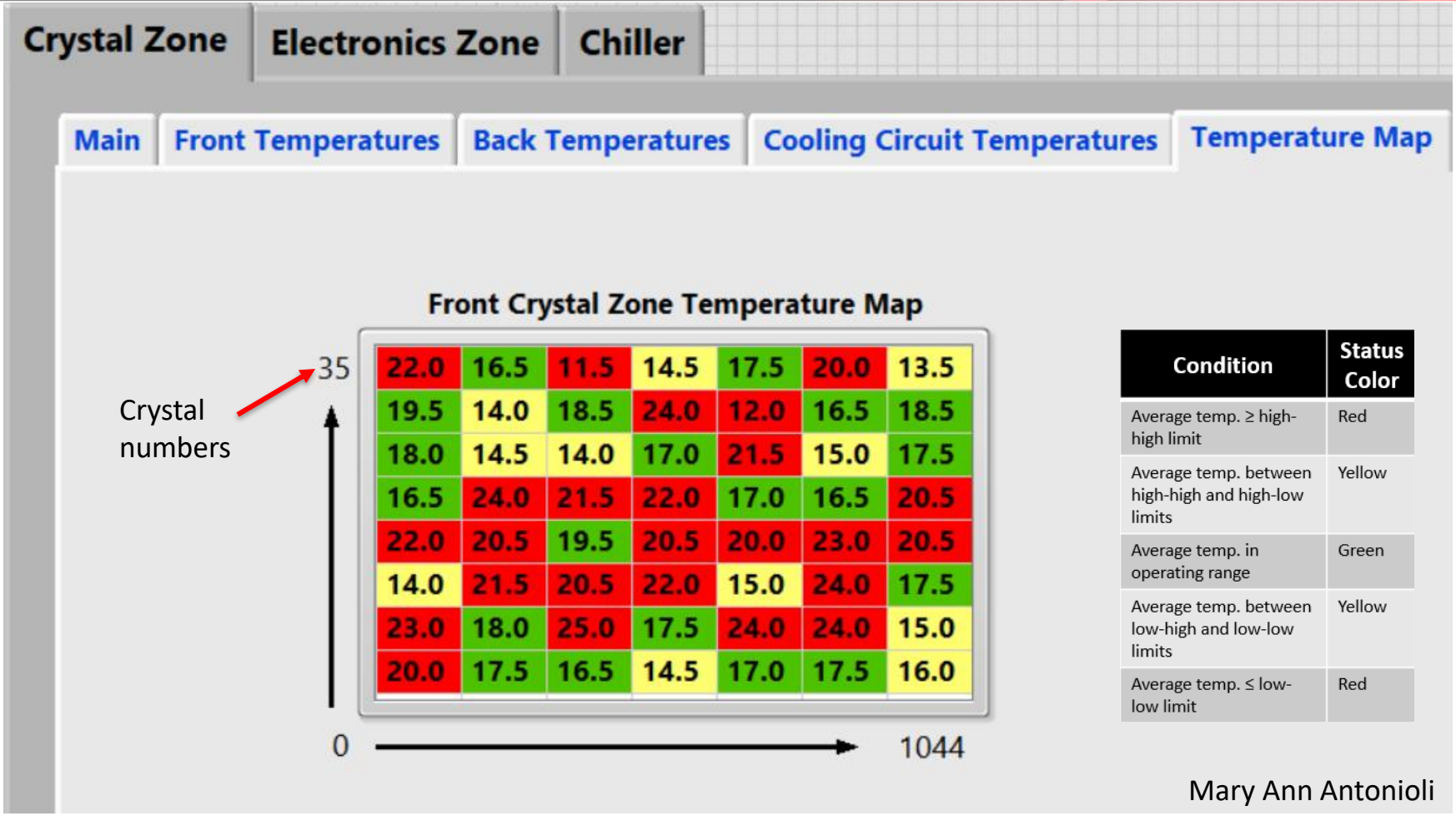
CAEN High Voltage Crate Interlock

- To prevent the interlock switch from being flipped to the wrong position
  - Administrative control: “Do Not Touch” sign
  - Switch requires two actions to be flipped
    - Pull out and *keeping it pulled out* flip to the new position

Chiller Remote Power Controller

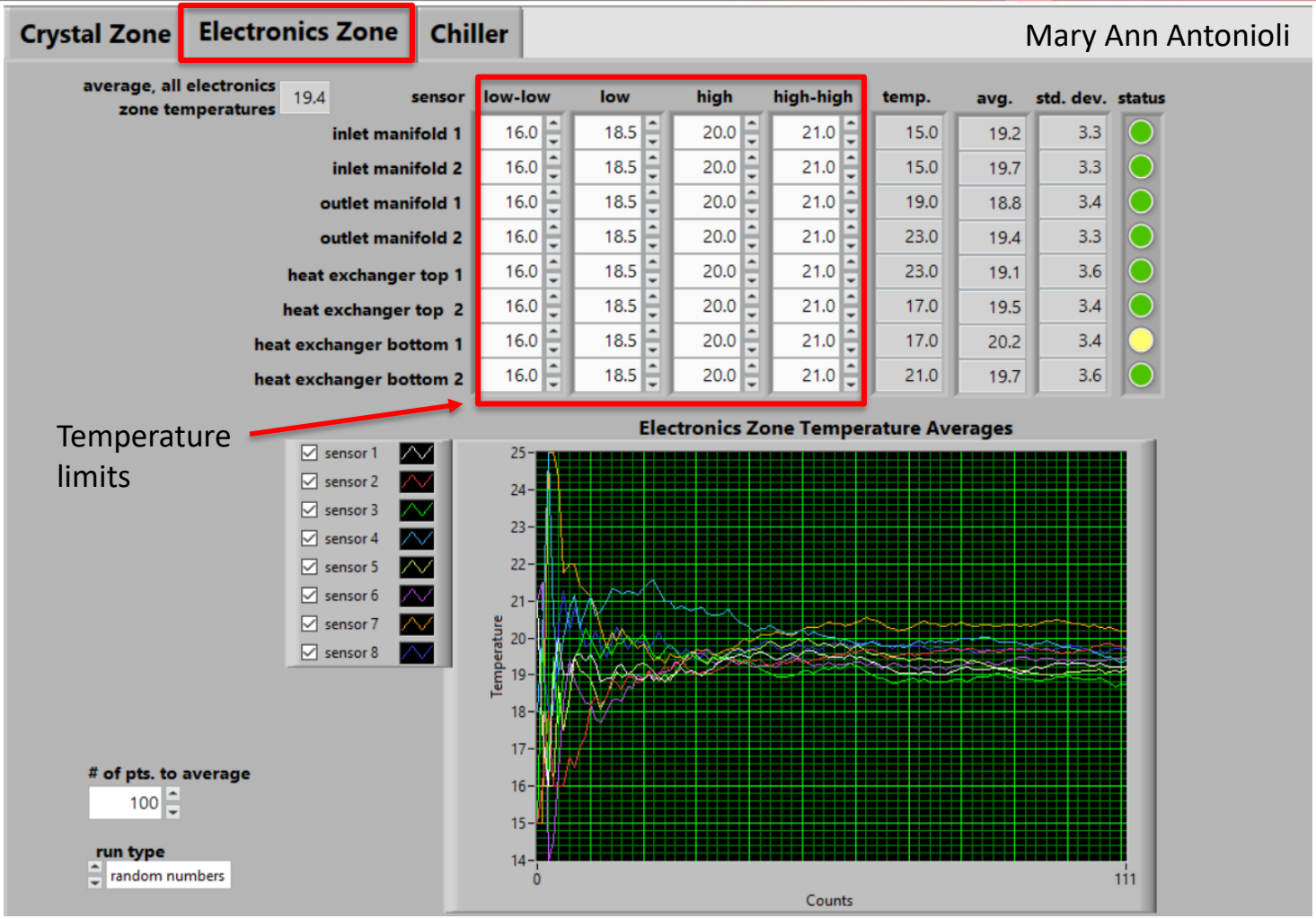
- Specifications of controller components indicate that there should not be damage due to radiation
- Can place remote power controllers in detector hut instead of shielded area *if necessary*

Hardware Interlock Monitoring Program



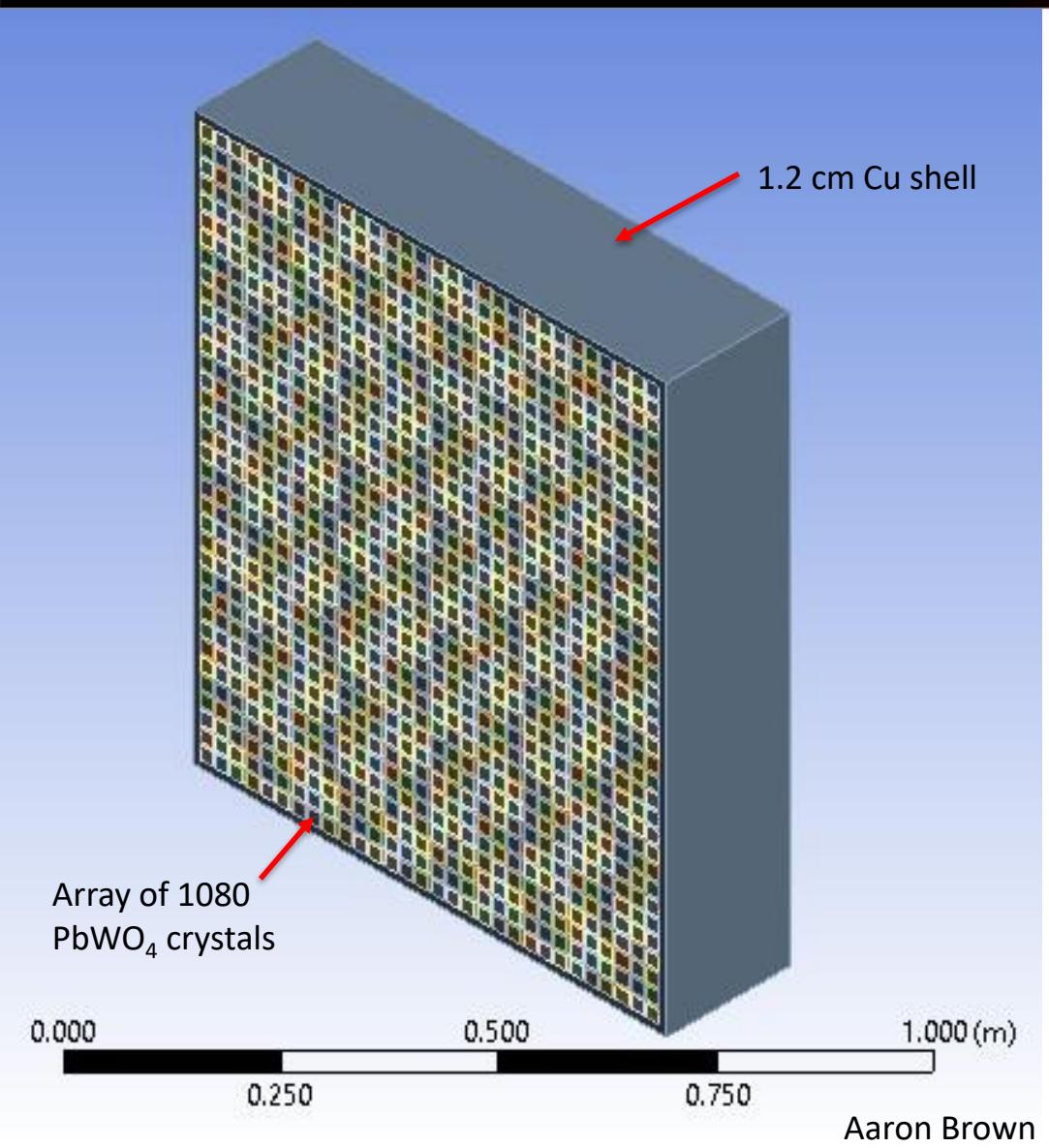
- Crystal zone Temperature Maps (front and back)
- Each block shows average temperature for each sensor
- Colors correspond to temperature limits set on Expert Settings tab

Hardware Interlock Monitoring Program



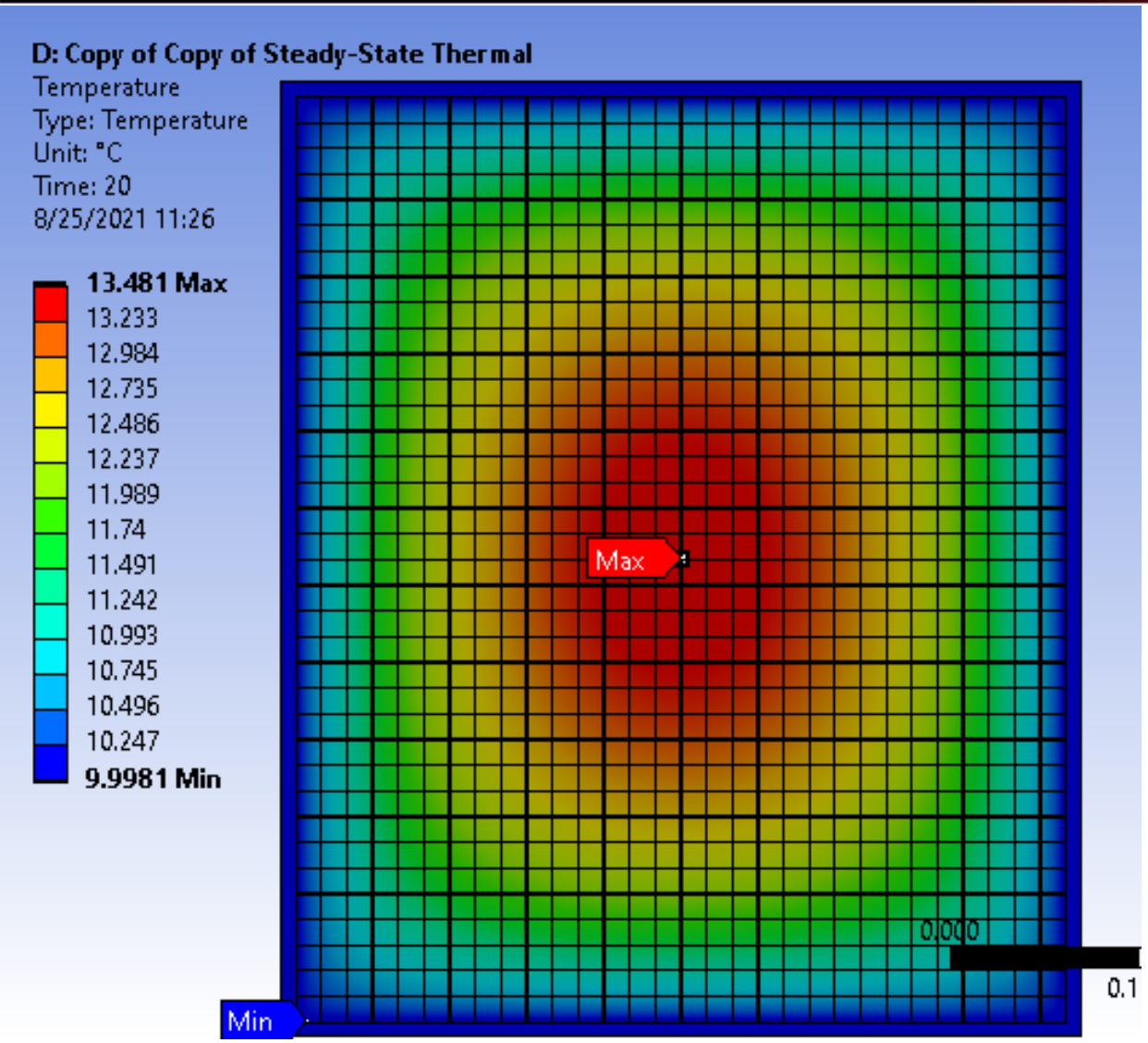
- Electronics Zone tab with temperature limits and averages
- Numbers shown randomly generated for testing and debugging

Ansys Thermal Analysis



- 36x30 array of $PbWO_4$ crystals surrounded by 1.2 cm thick copper shell
- Model will be used to understand the temperature profile of the crystals

Ansys Thermal Analysis



- Preliminary analysis done with 0.5 W heat load applied to front face of each crystal
- Copper shell a constant 10°C
- Maximum temperature of 13.48°C

Conclusion

- Development of LabVIEW Hardware Interlock Monitoring Program (**Mary Ann Antonioli**)
  - Temperature Map
  - Electronics Zone
- Ansys thermal analysis of crystal array temperatures underway (**Aaron Brown**)
- Making good progress!

Thank You!