

## DSG-Ansys R&D Meeting Minutes

**Date:** March 24, 2022

**Time:** 14:00 to 15:00

*Attendees: Aaron Brown, Pablo Campero, Brian Eng, and Tyler Lemon*

### 1. NPS crystal thermal analysis

*Aaron Brown, Brian Eng, and Pablo Campero*

1. Discussed Python plot showing the temperature for the NPS crystal blocks
  - Plot shows the column number (z-axis), row number (x-axis) and temperature (y-axis) of the crystal block
  - Gradient shown with only blue color
  - Brian suggested code modifications to change single color to a range of colors
2. Suggestions made to improve steady state thermal analysis for the NPS electronic volume
  - Add inverse heat flux to the heat exchangers; value for heat flux will be gotten from specifications sheet
  - Research why the temperature of the inner layers of the electronic volume is  $\sim 460^{\circ}\text{C}$  and outer layers  $\sim 34^{\circ}\text{C}$  when the internal heat generation applied is  $982\text{ W/m}^3$

### 2. EIC beryllium section

*Pablo Campero and Brian Eng*

1. Modified configurations for model analyzed in *Ansys Fluid Flow Fluent*
  - Removed unused volume inside the beryllium pipe and unused materials (steel, wood, aluminum) from the model
  - Made a finer mesh and reconfigured boundary conditions
  - Changed the air flow velocity from 5 to 10 m/s in the annulus space and ambient (enclosure)
    - Results of simulation not what was expected; investigation in progress
2. Discussed availability of temporary licenses to run *Ansys Fluid Flow Fluent*, provided by Ansys while awaiting purchased license
  - Temporary licenses were not available in the past few days; JLab technical support is working on issue