

DSG-Ansys R&D Meeting Minutes

Date: February 24, 2022

Time: 14:00 to 15:00

Attendees: Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon and Marc McMullen

1. NPS Thermal Analysis

Aaron Brown

1. Reviewed dimensions of the detector frame to be used for the thermal analysis
2. Discussed geometry and conditions of the model to perform calculations of the heat generated inside the detector
 - A box with the approximate dimensions as the detector frame will be assumed for the calculations
 - The box walls' material to be considered will be plastic
 - The heat source will be the crystals placed inside the box
 - Forced heat convection will be assumed

2. EIC beryllium section

Pablo Campero and Brian Eng

1. Preliminary results acquired in Ansys Fluid Flow are incorrect
 - Will review boundary conditions and analysis mode for the model
2. Unable to run steady-state thermal simulation for the EIC beryllium section using aerogel material instead of air in the annulus space
 - Did not find aerogel material; tried using Alumina 96% (available in Ansys) but its heat thermal conductivity is 25 W/mC, which is too high compared with expected aerogel to a range of 0.005 to 0.5 W/mC
 - Agreed to add user-defined material to simulate aerogel thermal properties