DSG NPS Collaborators’ Meeting Update

Aaron Brown and the Detector Support Group
09/09/2021
Contents

• Temperature Mapping
  – LabVIEW
  – EPICS
• Thermal Analysis
• MySQL Database Development
• Conclusion
• Revised blocks show actual temperatures
• Temperatures randomly generated

<table>
<thead>
<tr>
<th>Condition</th>
<th>Status Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>avg. temp. ≥ high-high limit (20°C)</td>
<td>Red</td>
</tr>
<tr>
<td>high-high (20°C) &gt; avg. temp. &gt;= high (18°C)</td>
<td>Yellow</td>
</tr>
<tr>
<td>avg. temp. in operating range (16°C &lt; avg. temp. &lt; 18°C)</td>
<td>Green</td>
</tr>
<tr>
<td>low (16°C) &gt;= avg. temp. &gt; low-low (13°C)</td>
<td>Yellow</td>
</tr>
<tr>
<td>avg. temp. ≤ low-low limit (13°C)</td>
<td>Red</td>
</tr>
</tbody>
</table>
• EPICS Temperature Map created using Phoebus
• Temperatures randomly generated via embedded JavaScript
• All EPICS screens will be created using Phoebus
Front face of 3x3 block of crystals with carbon fiber dividers (left) and rear face with 0.5 W heat load applied to each crystal (right); copper shell a constant temperature of 10°C.

- 3x3 block of PbWO$_4$ crystals
- Added carbon fiber dividers to front
- Developing a MySQL database for CAEN module and High Voltage Supply cable testing analysis plots
- Links to plots on DSG webpage (copy/paste in browser)
Conclusion

• Developing EPICS Temperature Map screen for users

• Developing thermal analysis using Ansys
  – Need to place mu-metal dividers at rear of crystal array
  – Need to verify proper carbon fiber material selection

• Developing MySQL database for testing analysis plots

• Making steady progress!
Thank You!