DSG NPS Collaborators’ Meeting Update

Aaron Brown and the Detector Support Group
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Hardware Status

• HV Divider Cables
  – Mindy Leffel has fabricated 1020 of 1100 cables
  – Expect to have all cables fabricated by January 2021

• Procurement status for cables/connectors
  – Radiall 52-pin connectors: ETA November 2020 DELAYED
    ▪ Expected by end of December 2020
  – SAMTEC IPBD-15-D-K & IPBD-08-D-K: ETA November 2020 ARRIVED
  – GWP 142’ multi-conductor wire: ETA December 2020 ARRIVED
Hardware Status

• Module Testing
  – George Jacobs completed ramp testing of all HV modules
    ▪ Module #297 is defective; could not be tested
  – Used Python program with Pyepics package

• PMT status pop-up screen
  – 70 of 1080 screens completed

• PMT settings pop-up screen
  – Sets voltage and current
  – Mary Ann Antonioli completed 468 of 1080
• New Python ramp test program addresses EPICS communication issues experienced when using CSS-BOY script for testing
• Module #349 has a bad channel: Ch #13 failed to ramp beyond 75 V
CAEN HV Module Trip Testing (Voltage)

- All channels ramped from 0 V to 1500 V at ~200 V/s
  - Mary Ann Antonioli has analyzed ~600 channels
  - Readback voltage did not reach 0 V after trip
CAEN HV Module Trip Testing (Current)

- Readback current never reached 0 μA after trip
NPS Hardware Interlock System

• Monitors environmental conditions within NPS detector frame

• Protects detector by interlocking on:
  – Humidity (~30-40% RH)
    ▪ Sensor sensitivity of ± 3%
  – Temperature
    ▪ Crystal zone (18°C ± 0.1°C)
    ▪ Electronics zone (TBD)
  – Coolant leaks
  – Fan speed
  – Chiller status

• Monitored signals transmitted to EPICS

• Developing a 3-dimensional model of the detector using NX12 to determine where to place temperature and humidity sensors
Conclusions

DSG is making good progress in all areas!
Thank You