

INFN GEM Update:

3/10/21-3/16/21

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Recent Activities:

Hardware (Mar. 10-16)

- Used Low Level Histo Test to evaluate connections on all MPDs. Resolved connections for all MPDs in TEDF.
- Setup grounding for GEM chambers in a safer configuration.
- Setup SSP pulser trigger for MPDs connected to INFN GEMs, got this working with CODA 3 DAQ in TEDF.
- Started taking pedestal data and worked on formatting DAQ to take data from multiple crates.

Software (Mar. 15-16)

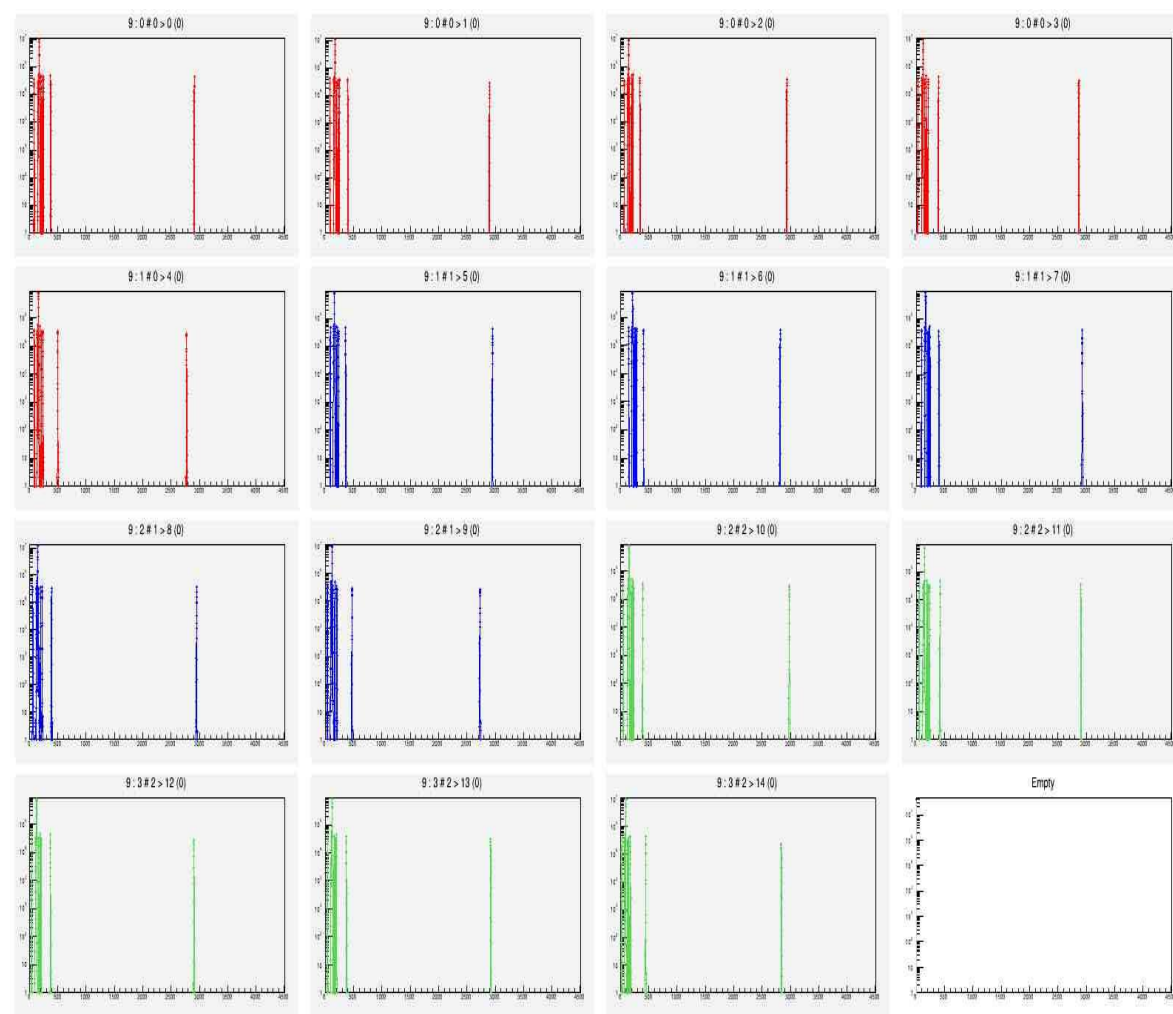
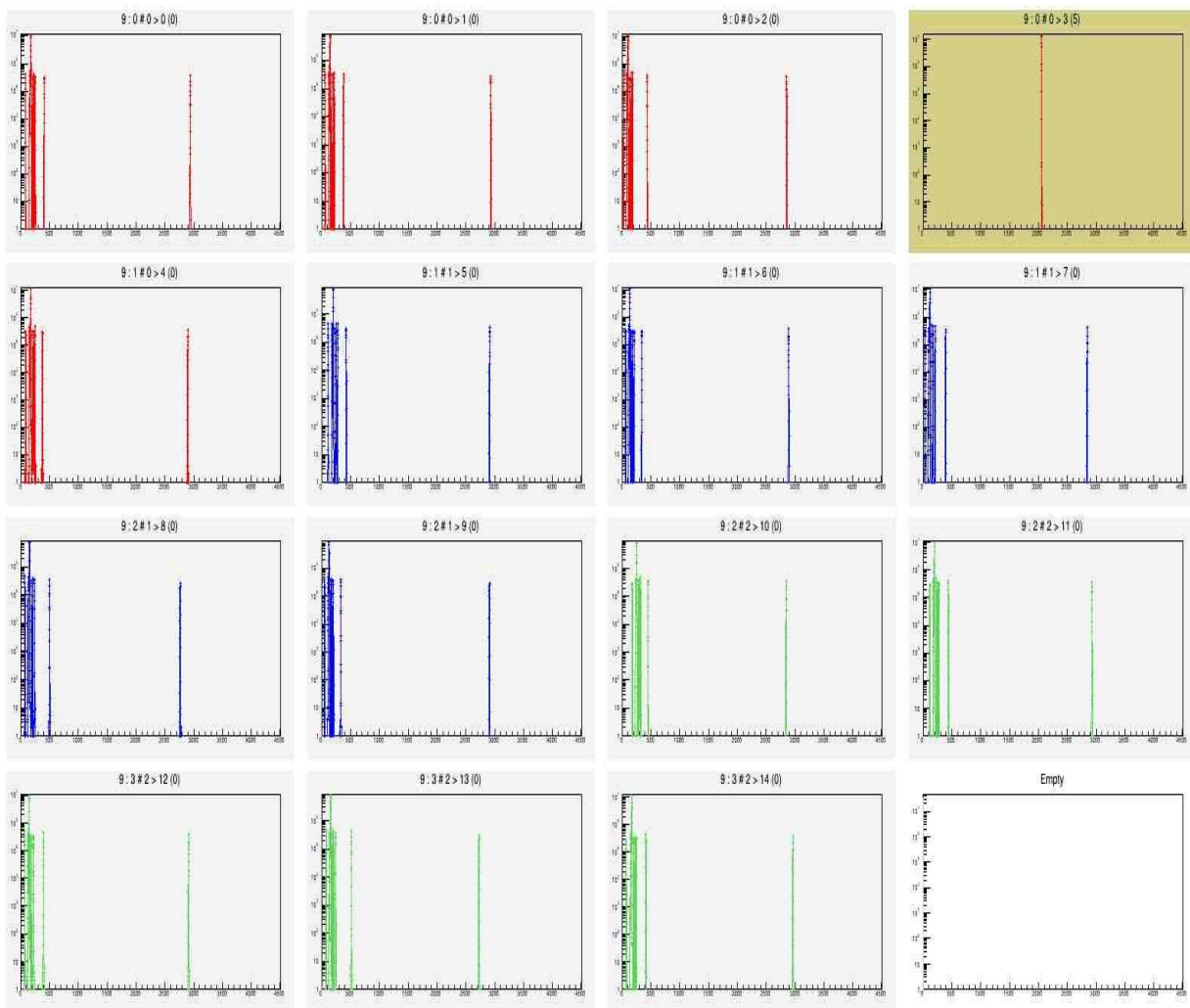
- Started working on mapping for Xinzhan's decoder to include INFN GEMs. Will use this to decode pedestal data and make plots.

Low Level Histo Test (Amplitude vs ADC value): TEDF MPD 9 Mar. 10

- Connected to chamber J2.

Before: Long analog cable mislabeled and different ordering of all long analog HDMI cables between MPD and GEM

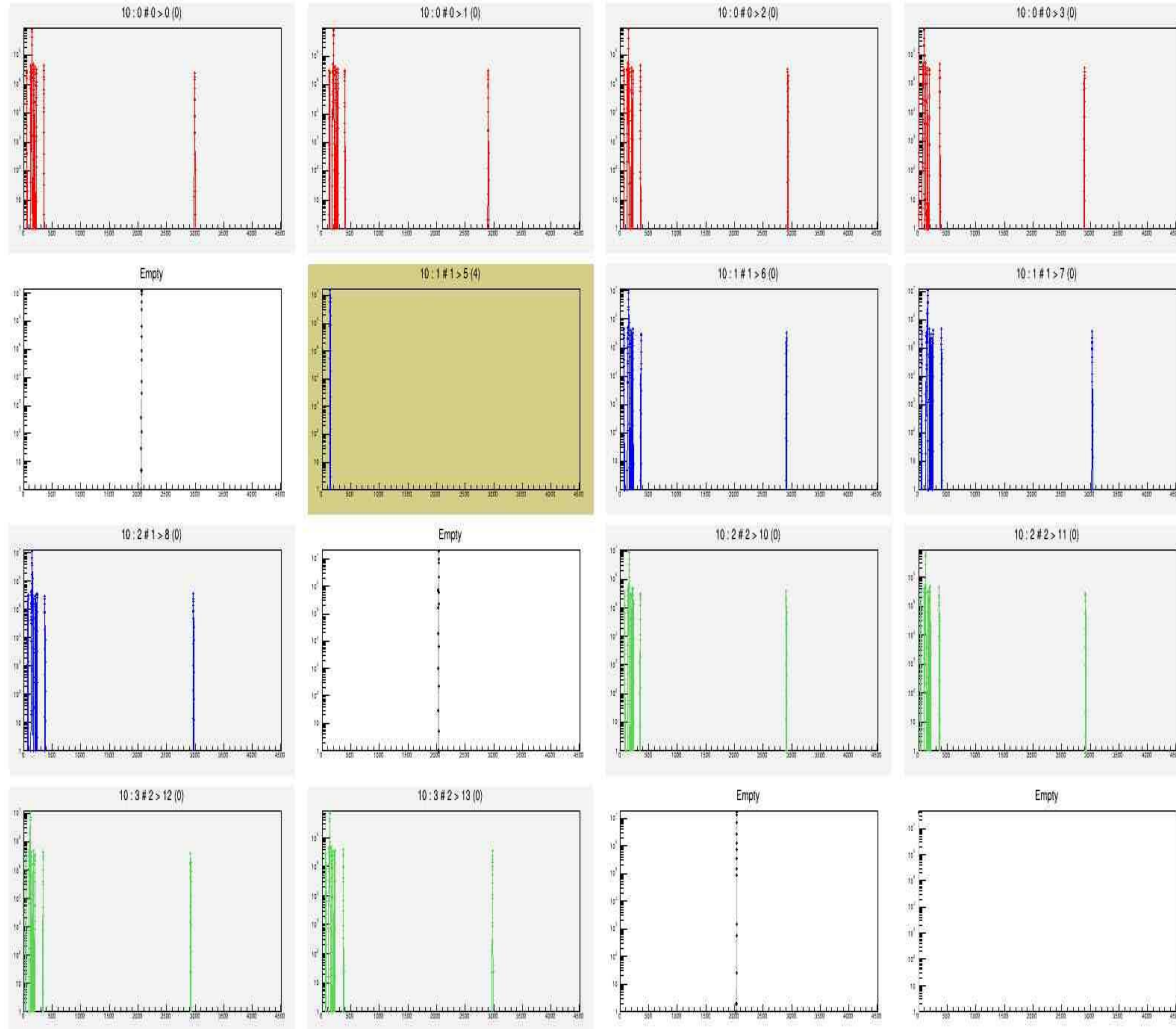
After: proper labeling for one long analog HDMI cable and same ordering of all long analog cables at MPD and GEM



Low Level Histo Test (Amplitude vs ADC value): TEDF MPD 10 Mar. 11

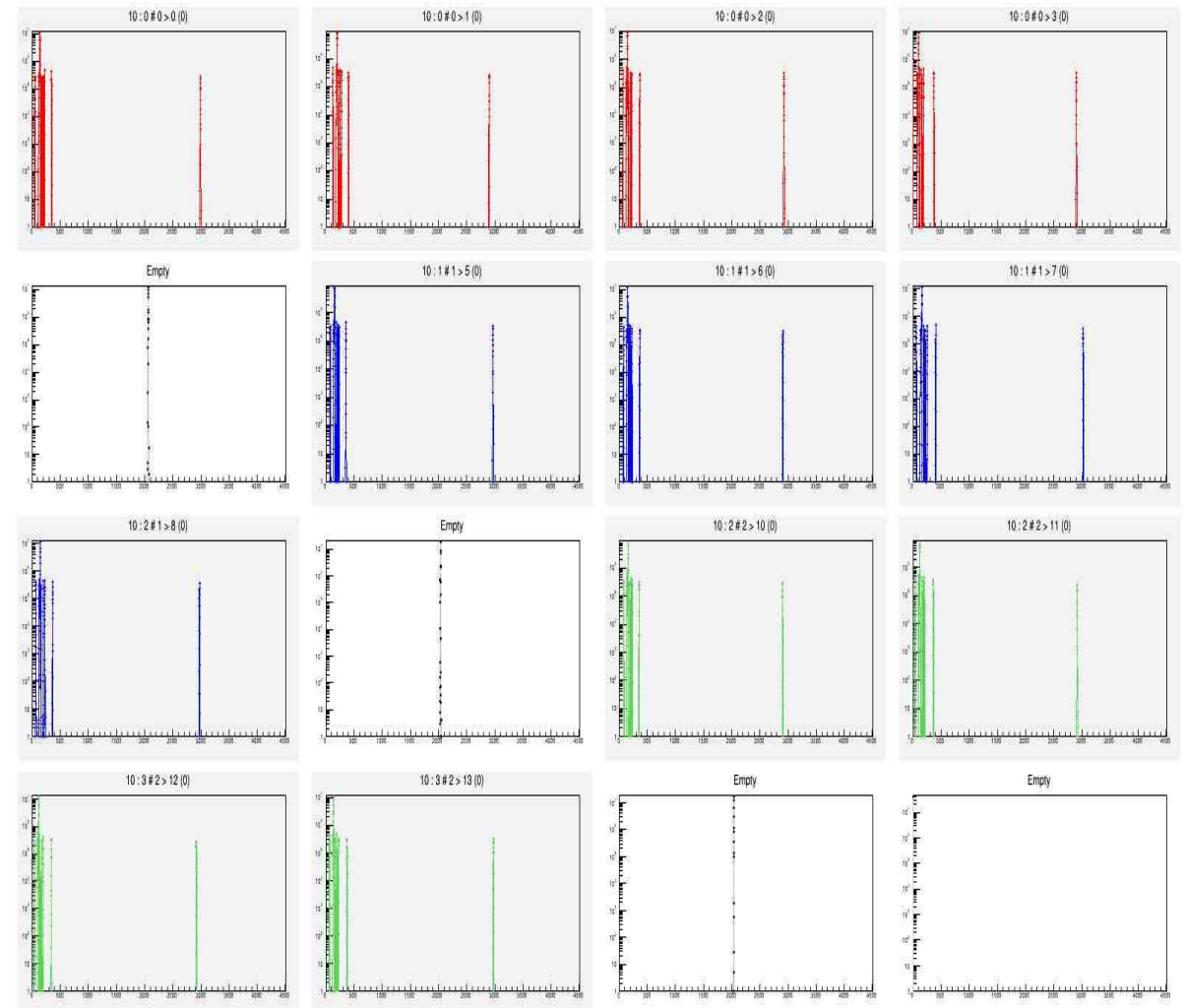
- Connected to chamber J2.

Before: Partial connection or disconnect of APV card and flexible backplane



After: Tried Reference backplane first. Showed good plot.

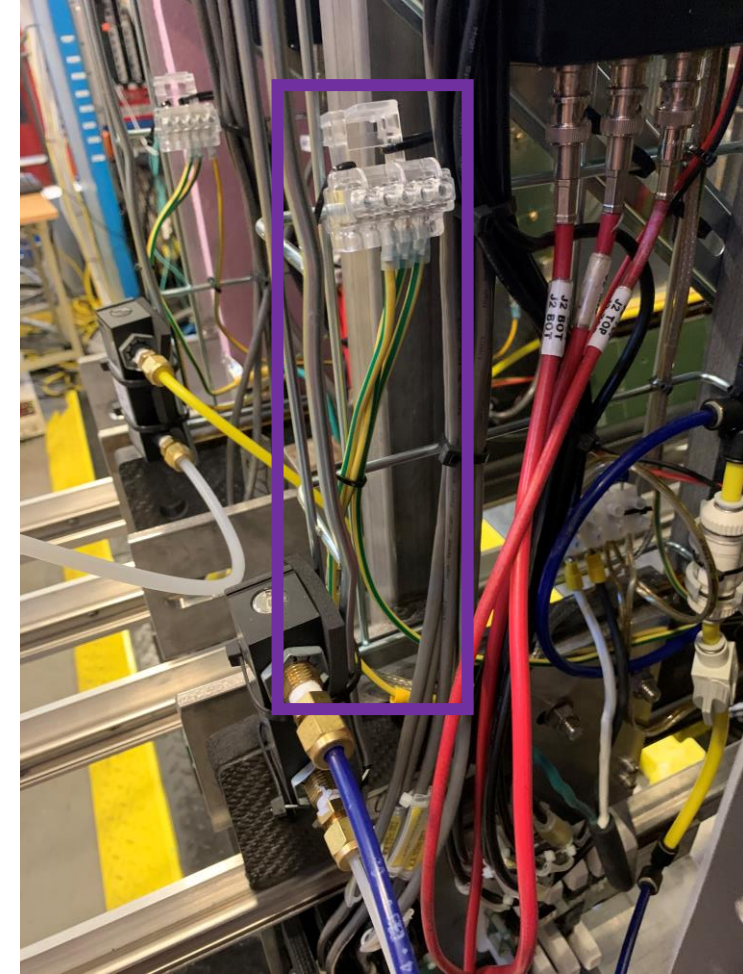
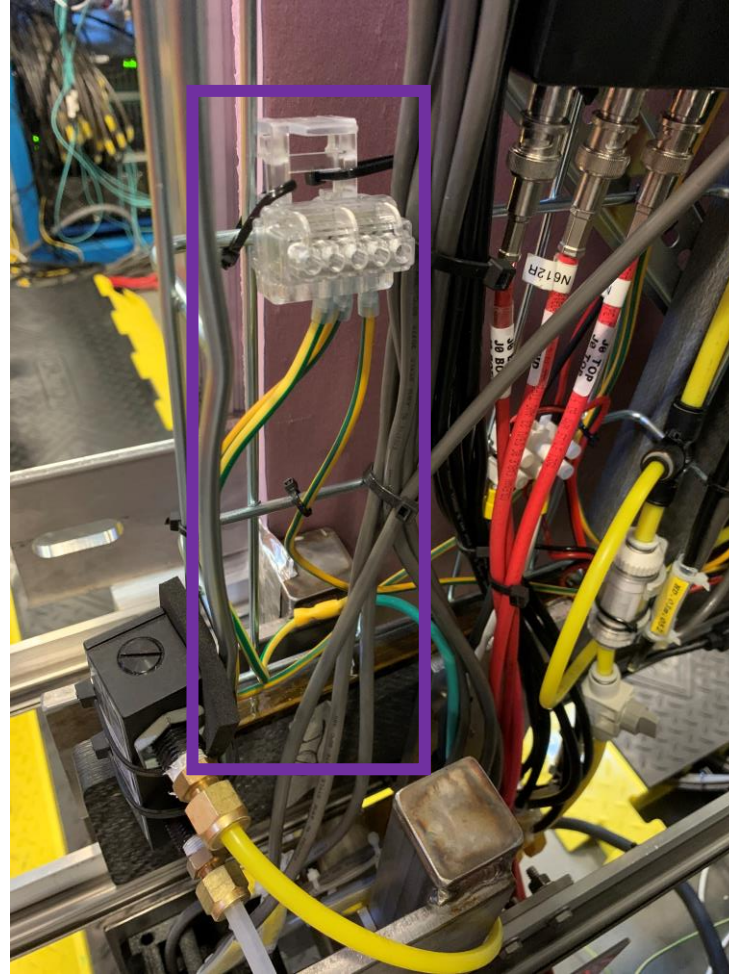
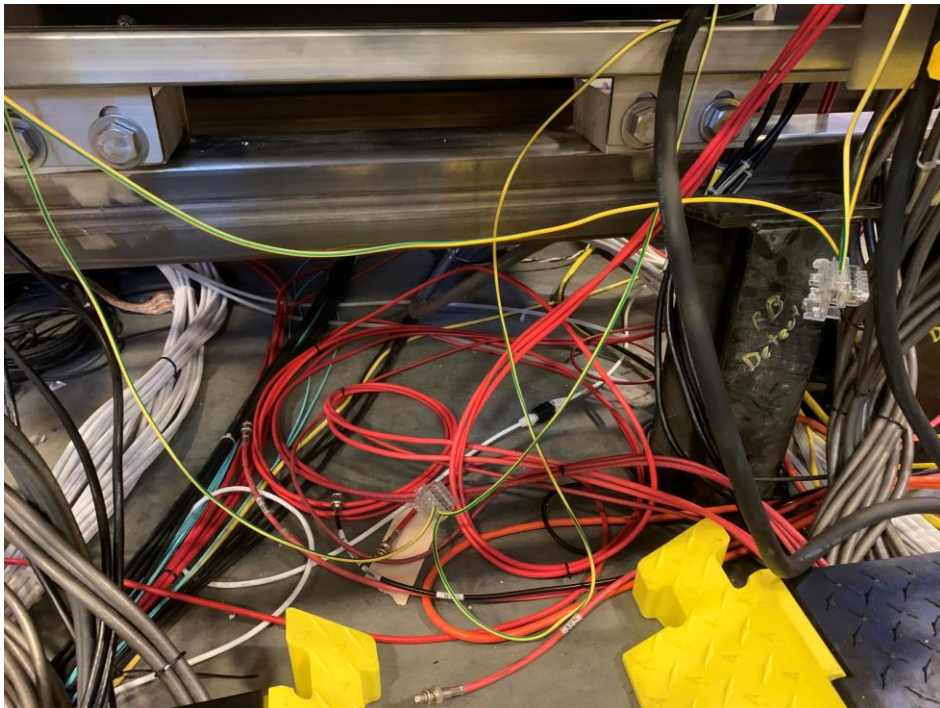
So unscrewed nuts from backplane and disconnect/reconnect APV card to backplane



Safer GEM layer Grounding, Mar. 11:

After: Attached to cable trays of J0 (left) and J2 (right)

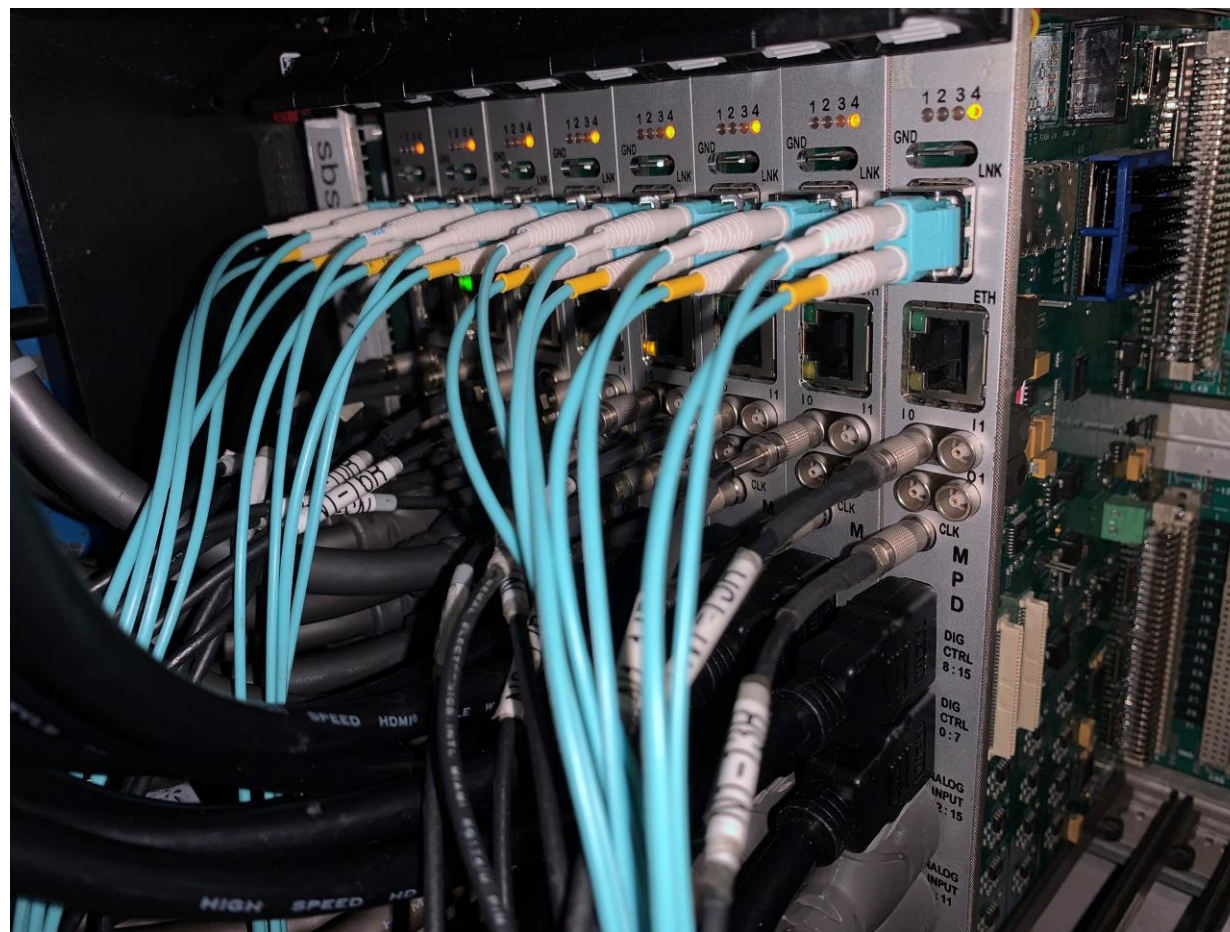
Before: Green & yellow cables in connector under frame



SSP & Pulser Trigger, Mar. 15:



Trigger Distribution box for GEMs.
Yellow: L1A trigger for SSP. 8 nanosecond cables go to MPDs for INFN GEMs port I0 at each MPD.
Purple: Clock for pulser trigger. 8 nanosecond cables got to MPDs for INFN GEMs port CLK at each MPD.



MPDs for INFN GEMs in TEDF with trigger, SSP, and HDMI cables.

At some point need to do Latency scan because of different cable lengths.

What to do next?

- Test Lab GEM Chambers
 - Figure out problems with J4 and J3, possibly linked to MPDs 7 and 15.
 - If MPDs are available move J1 to the cosmic stand and integrate in into the system.
 - Make sure DAQ is properly connected in Test Lab.
 - Change J3 cable trays to metal.
- GEM Chambers in BigBite
 - Setup any remaining software/programs for INFN GEMs in TEDF configuration.
 - Setup cosmic trigger.
 - Take pedestal data and check multiple analysis forms: common mode subtraction, zero suppression, etc.
 - Look for any noise issues and see if we need to adjust grounding.
 - Compare spacers for 1st track mount of BigBite Frame.
 - Test GEM HV.
 - Make covering for connectors on back of LV power supply.
- Data Analysis:
 - Create Efficiency plots by adjusting Malinga's macro for INFN GEMs.
 - Adjust Evaristo's macro if necessary to remove dead areas.