INFN GEM Update:

Hardware Troubleshooting and Cosmic Data

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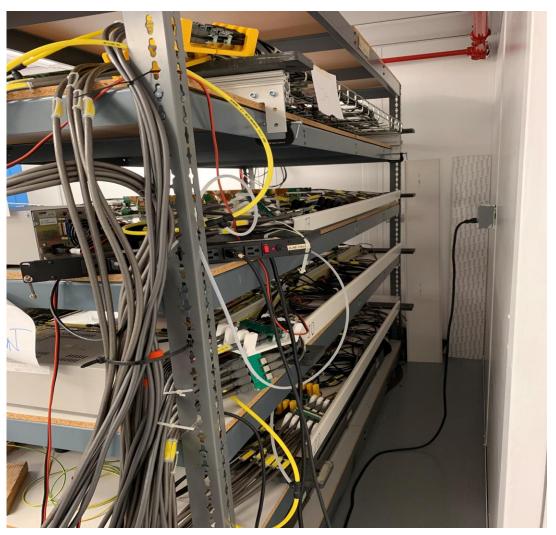
Recent Activities at JLab:

- Hardware (Nov. 11-12)
  - Work in-progress of replacing cable trays (from plastic to metal) for at least chambers J2 and J0, best overall chambers.

- Data (Nov. 11-12)
  - Decoded and made some plots for runs 147-159, for data taken Nov 6-10.

- Analysis (Nov. 13 & 16)
  - Still working with INFN config file for offline analysis (Andrew's Code) . Y-Residuals vs layer are fairly aligned. X-Residuals vs layer are still being aligned.

- Hardware (Nov. 16-17)
  - Completed cable tray replacement for chamber J0 on the DAQ side. Low Level Histo and Pedestal Tests passed.
  - Started cable tray replacement for chamber J0 on the door side.

Cable Trays Before Replacement

From top to bottom DAQ side: J4 (metal), J3 (plastic), J0 (plastic), J2 (plastic). Priority is J0 and J2, since best chambers

Door side, top to bottom ordering is the same

Cable Trays Replacement Progress

From top to bottom DAQ side: J4 (metal), J3 (plastic), J0 (metal), J2 (plastic). Priority is J0 and J2, since best chambers

- Replaced DAQ side cable tray for chamber J0, plastic to metal.
- Reconnected all cables and tied cables in place with cable ties.
- This cable tray contains cables for electronics connected to MPDs 3-6.
- Checked multiple iterations of Low Level Histo Plots (Amplitude vs ADC value) and unplug/replug cables until plots show nominal behavior.
- Checked Pedestal plots (Run 177), which looked similar to previous pedestals under similar conditions. Conditions: HV= 0 V, N2 flushing, ~3000 events.
- Conclusion, this cable tray replacement was successful.
- Serves as a learning experience for me in replacing cable trays.

What to do next?

- Hardware:
  - Finish changing plastic cable trays to metal cable trays for at least chambers J2 and J0. Once change is complete, for each cable tray verify Low Level Histograms and Pedestal RMS plots.
  - Check HV divider for lowest module on J4.
  - Systematic check of noisy cards for all chambers. Particularly we already know the last card on MPD 8 needs reconnecting.
  - Start building the GEM frame in the next few weeks

- Data Analysis:
  - Finish optimizing alignment parameters for INFN config in SBS offline analyzer (Andrew's Code).
  - Once properly aligned, reanalyze recent data with SBS offline analyzer.
  - Use the HV scan data to make a plot of Efficiency vs HV