Quasi-online monitoring: progress and updates

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Data file considerations

- Crucial stumbling block for some of the data formats:

  - We **cannot** open a ROOT file and cherry-pick a ROOT object to send to the analysis module

  - We **could** go through the trees, branches etc. and "re-assemble" the data in memory

  - It **would be better** to have the original file from the DAQ, which is easier to implement DQM4HEP file readers for

- This limitation has some silver linings:

  - If the conversion from raw storage format to ROOT file takes some time, DQM4HEP can start monitoring as soon as the raw file is written, no need to wait for the conversion

  - Probably simpler code with less memory usage

Progress summary

- Since last meeting, mostly gathering data and consulting experts for each system for information needed to write modules.

- Added XML parsing to the SiPM file, so it now also a RunInfo object with rich information about the run parameters for use within DQM4HEP.

- Calorimeter data is priority but also the most complex – still in contact with Roberto and iterating on the file reader.

- Have data from the muon and preshower, but only in ROOT file format – ideally need the "raw" data file, but no reply yet from Gianluigi.

- Have data for the drift chamber, and have decoded most of it in DQM4HEP, but some problems due to some missing libraries – Gianfranco is looking into this.

Resources

- If you want to learn how the monitoring works or to write your own analysis modules:

    - DQM4HEP user's guide documentation, including how to write plugins: http://dqm4hep.readthedocs.io

    - DREAM-specific plugins, including file readers and analysis modules: https://github.com/tcoates3/dqm4hep-dream/tree/dragonfruit/source/src/plugins

- Getting input from experts on the detector systems for what plots are needed is crucial!

- Don't hesitate to contact me with any questions or needs: tc297@sussex.ac.uk

Status summary

- **SiPM**:
  - File reader: DONE
  - Analysis modules: DONE (Per-channel spectra, per-run hitmap)
- **RD52 Calorimeter:**
  - File reader: IN PROGRESS (but very nearly done...)
  - Analysis modules: NOT STARTED
- **Muon detector and pre-shower**
  - File reader: NOT STARTED (still need "raw" data format from Gianluigi)
  - Analysis modules: NOT STARTED
- **Drift chamber**
  - File reader: NOT STARTED (waiting on fixes from Gianfranco)
  - Analysis modules: NOT STARTED