





### **Calorimeter DAQ**

DAQ Workshop

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#### **Commissioning @SiDet**

(From March CM)





## **Transition to KPP**



# **Online processing**



- **Grafana** monitoring
  - Tested at SiDet with basic
  - Next: expand with metrics useful for shifters
- DQM
  - Started testing online DQM modules at SiDet
  - Mark's complete module installed, pending extensive testing
  - Next: test data rate capability with full disks current dispatcher prescale 1/100
- Trigger

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- Raw-to-hit fast module prepared and tested offline
- Next: test online rate capability for trigger purposes







### Database

- Both online and offline databases under development
- Offline archive tables
  - First CosmicEnergyCalib table is live
  - OpenTool and art-reader available, thanks to Ray
- Production tables
  - Infrastructure is already there
  - Next: create a starting calibration and test offline
- Online tables
  - Some of the offline tables should be used online (calibration, templates, etc.) and vice-versa (maps, baselines, etc.)
  - Test online-offline integration





## **Calo decoders**

- Calo decoders still used online but no longer saved as intermediate dataproducts for speed efficiency
  - See Giani's talk DocDB#52180
- They serve decoding functions for:
  - Counters
  - Debug hits (for commissioning)
  - Normal hits
  - Hits for trigger (skips waveform mem copy)
- New hit structure under development (Luca)



## New hit structure





- New hit structure collects header info at the beginning and the waveform at the end
- Knowing NSAMPLES before the waveform will greatly improve fast decoders for trigger purposes
- 4-bit error flag to link underflow/overflow of each channel's FIFO
- Baseline and max\_index words for fast reconstruction
- Reserved words for sanity checks
- To be deployed and fully tested

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## Conclusions

- Calorimeter data processing continues to evolve rapidly to address and bridge the needs of calo commissioning and TDAQ development
- Now that the calo is commissioned (@SiDet), focus is shifting to prepare for stable and complete art online and offline processing for commissioning @MC-2 and for KPP
- TODO list:
  - Online: fully deploy grafana metrics and DQM for system monitoring and data visualization.
  - **TDAQ**: perform rate tests with full disks for trigger capabilities
  - Database: complete calibration tables, prepare combination scripts, tests and validate procedures. Interface with online DB