

BCAL_LED Online Monitoring

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"The objectives underlying this system are to provide continuous online monitoring and relative offline gain and timing calibration for the Barrel Calorimeter (BCAL)..."¹

- LEDs on upstream and downstream end-caps of the BCAL.
- **2016-2018 spring:** We pulsed separate sectors with different bias voltage.
- **2018 fall:** Currently pulsing all sectors simultaneously with the same bias alternating between upstream and downstream LEDs (two modes) at 10 Hz for 5 minutes each.

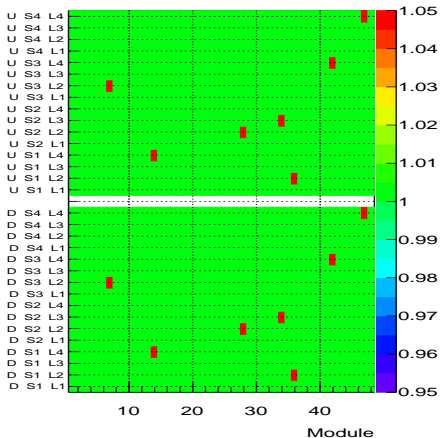
¹G.Voulgaris, P. Ioannou, C. Kourkoumelis, Development of a Calibration System for the GlueX Calorimeter and TOF Detectors, DocDB-1285

Objectives

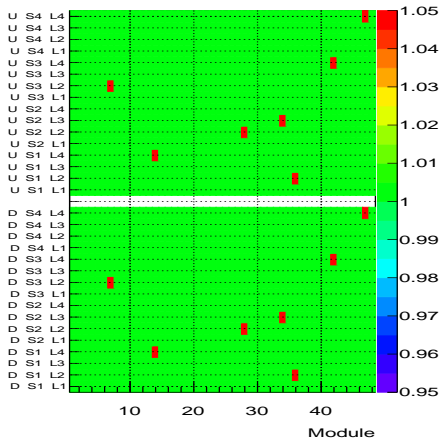
- **Online, shift takers:**
 - pulse peak (normalized to 1)
 - timing
- **Essentially Online, expert:** daily monitoring of skim files.
- **Offline, expert:** detailed studies of SiPM/LED system, radiation damage.

Pulse Peak Monitoring - Shift Takers

LED Pulse Peak (Normalized)- Downstream Pulsar

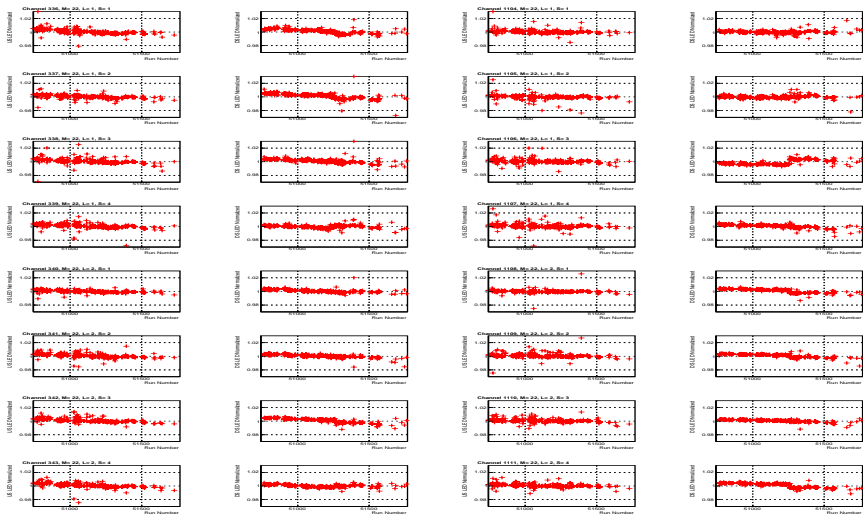


LED Pulse Peak (Normalized)- Upstream Pulsar



Pulse Peak Monitoring - Expert

↓ BCAL Channel vs Run number ⇒



Downstream Channels

Upstream Channels

Next Steps

- Improve automation.
- Make a decision on monitoring plan.
- Implementation.
- Super ratios? Divide upstream over downstream.
 - Rules out LED deviations.
 - half the number of histograms.
- Timing Inspection: feasibility under investigation.