Azimuthal Intercalibration for TileCal

- Calibration Method
- Implementation
- Results

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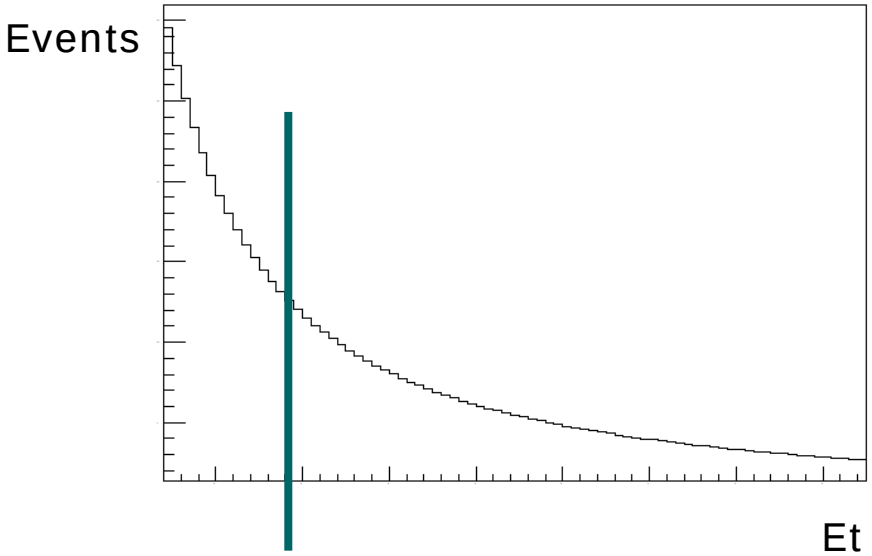
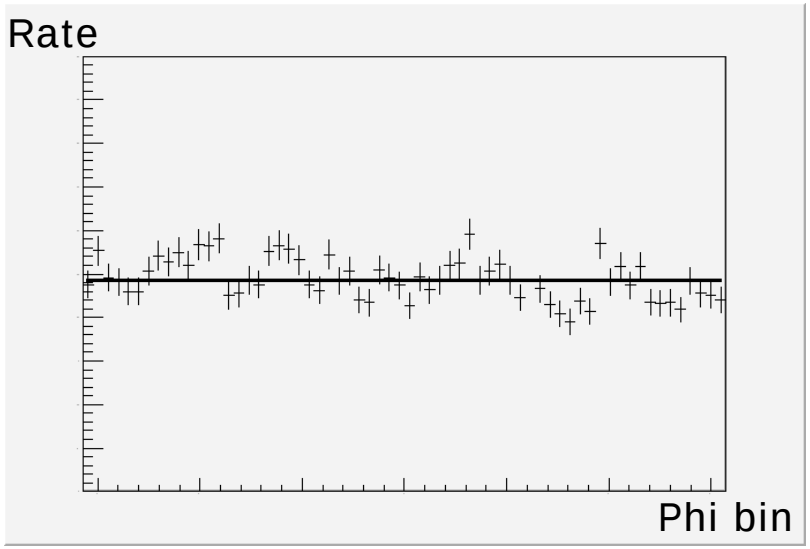
Calibration method

- Set a threshold on tower Et and a lower one for cell Et in each layer
- Count events in towers and cells with Et above the respective thresholds



Calibration method...

- Fit the rate distributions in phi with a Gaussian and determine width
- If width larger than the Poisson expectation sqrt<N> determine calibration constants and apply them → flat Φ-distribution
- Cross-check with jet distributions in phi



Implementation

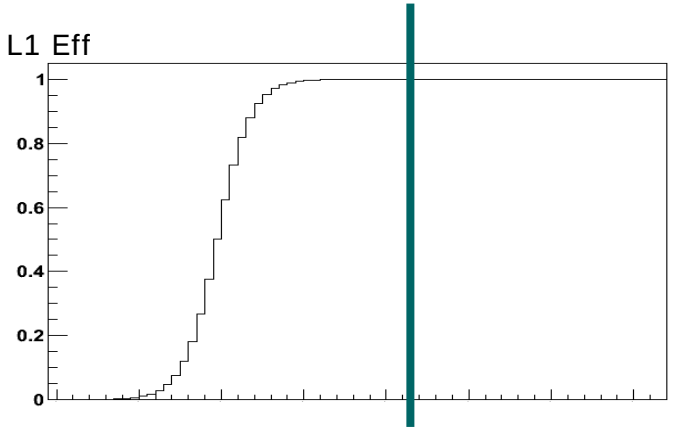
- Online class collecting histograms in **L2**:

  2-dimensional histograms of Et in phi for each eta wheel.

  TileCal granularity: 32 wheels of $\Delta\eta \sim 0.1$, 64 towers in wheel
- Processing program (offline) analyzing the histograms, fitting and calculating the calibration constants
- Offline analysis chain to check the results of calibration on cells and jets in reconstructed data

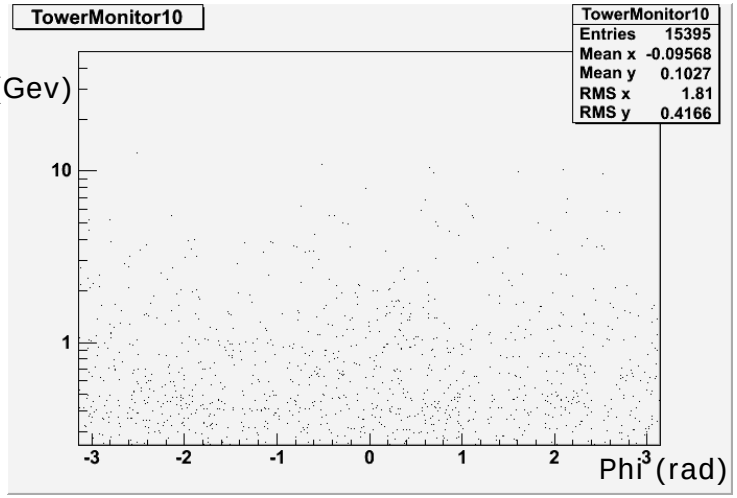
Why L2?

Method is sensitive to L1 Trigger Efficiency. The analysis thresholds must be set well above the L1 trigger threshold to minimized bias. Therefore, implementation is done within L2 in order to get a dedicated input jet trigger on L1 with high rate

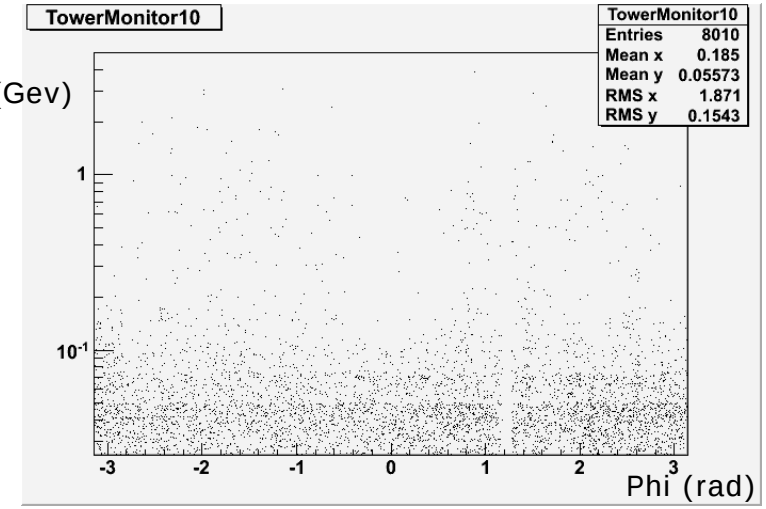


Et in Phi 2-d histograms

Monte Carlo



Cosmic data

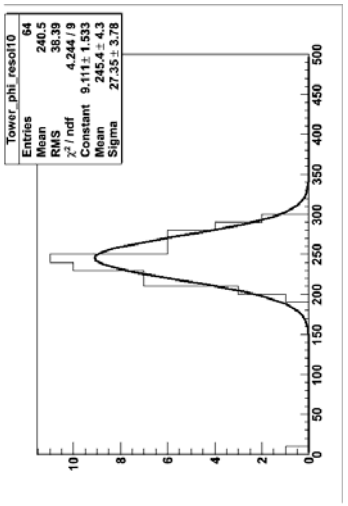


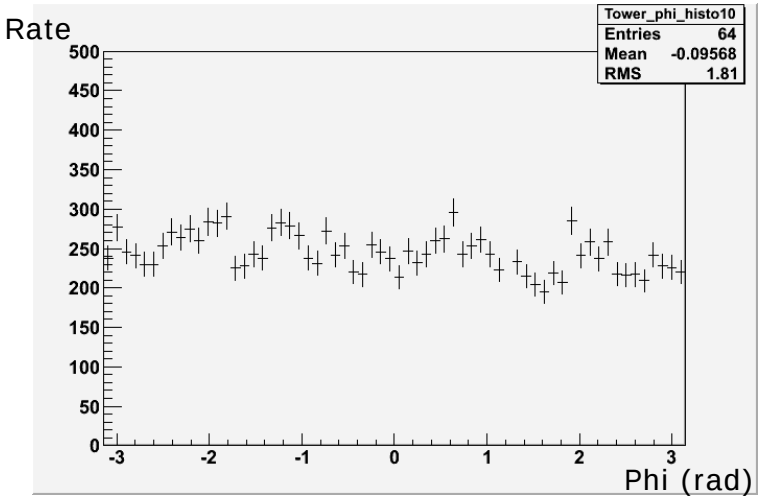
η=-0.6 wheel

- For the moment no thresholds applied

Tower Rate – Phi Distribution

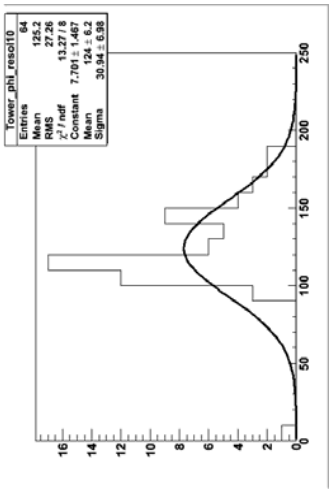
Monte Carlo

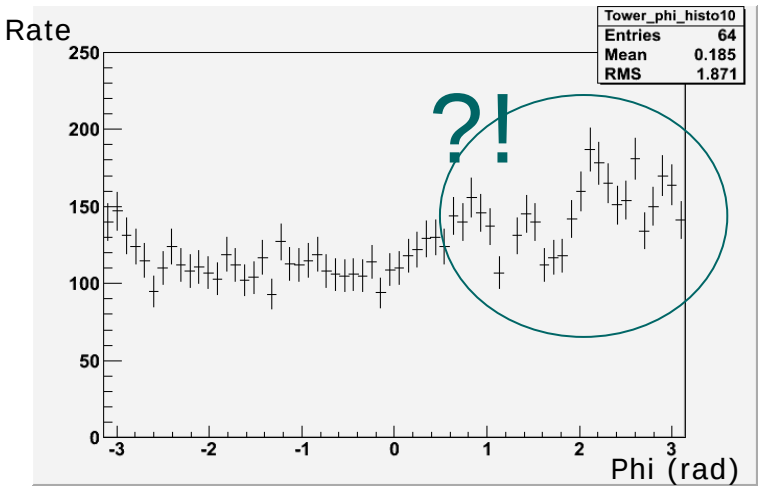




η=-0.6 wheel

Cosmic data





Summary

- Online class almost completed
  - still needed: jet trigger selection as input, implementation within L2
- Offline tool almost completed
  - possibly allow removing bad cells from fitting procedure