sPHENIX Paper Draft

Paper Committee
Ron Belmont, Megan Connors, Jin Huang, Vera Loggins, Abhisek Sen
September 2, 2016

Paper Outline

https://wiki.bnl.gov/sPHENIX/index.php/T-1044_publication

1. Introduction [Megan] - Comment go to both emcal and hcal list.
2. Prototype Electromagntic Calorimeter [Vera] - Comment go to emcal list
    1. Overview
    2. Block construction [Vera]
    3. Light collection [Sean]
    4. Assembly and support [Sean]
3. Prototype Hadronic Calorimeter [Abhisek] - Comment go to hcal list
    1. Overview
    2. Tile construction - [Ed K.]
    3. Tile testing - [Ron]
    4. Absorber and assembly - [TBD]
    5. Tilt - [Abhisek]
4. Readout electronics and DAQ - [Ron] - Comment go to electronics list
    1. SiPM - [Sean]
    2. Pre-amp - [Steve]
    3. Slow control - [Steve]
    4. ADC - [Chi]
    5. RCDQA - [Martin]
5. Simulation - [Jin]
    1. Framework - [Chris]
    2. EMCal - [Jin]
    3. HCal - [Chris, Murad]
6. Test beam - [Ron] - Comment go to emcal + HCal list
    1. Overview
    2. Setup
    3. Beam study (PbGl) - [John Haggerty/Vera]
7. Results- [Megan]
8. Conclusion [Megan] - Comment go to both emcal and hcal list.

Paper Plot Candidates

https://wiki.bnl.gov/sPHENIX/index.php/T-1044_publication#Links_to_plot_candidates

Note: All plots shown are not finalized yet

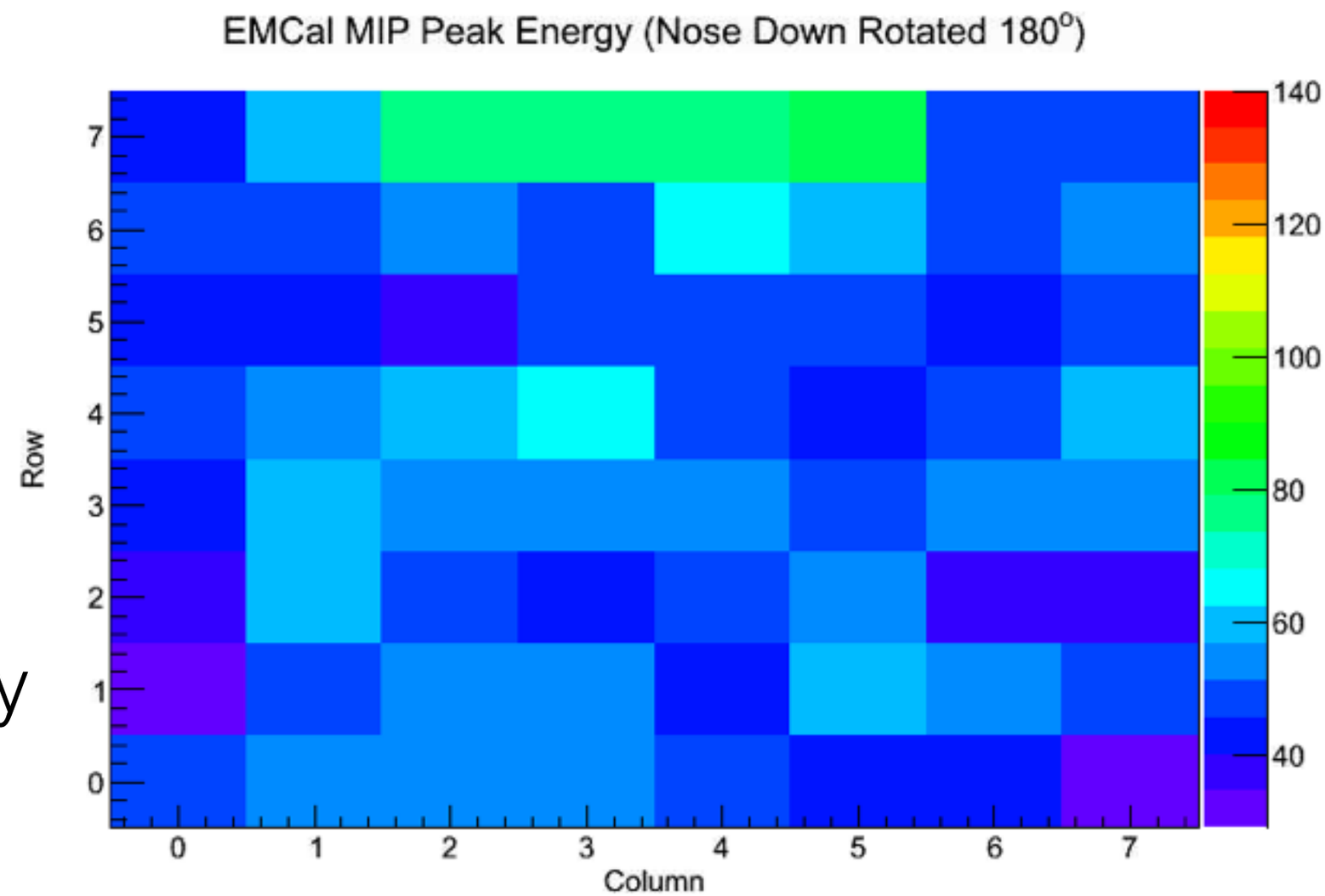
EMCAL Analysis:

Calibration set 2

Fits are made to the energy spectrum for each tower to determine the MIP peak.

Nose down, rotated 180 deg

M. Skoby



Paper Plot Candidates

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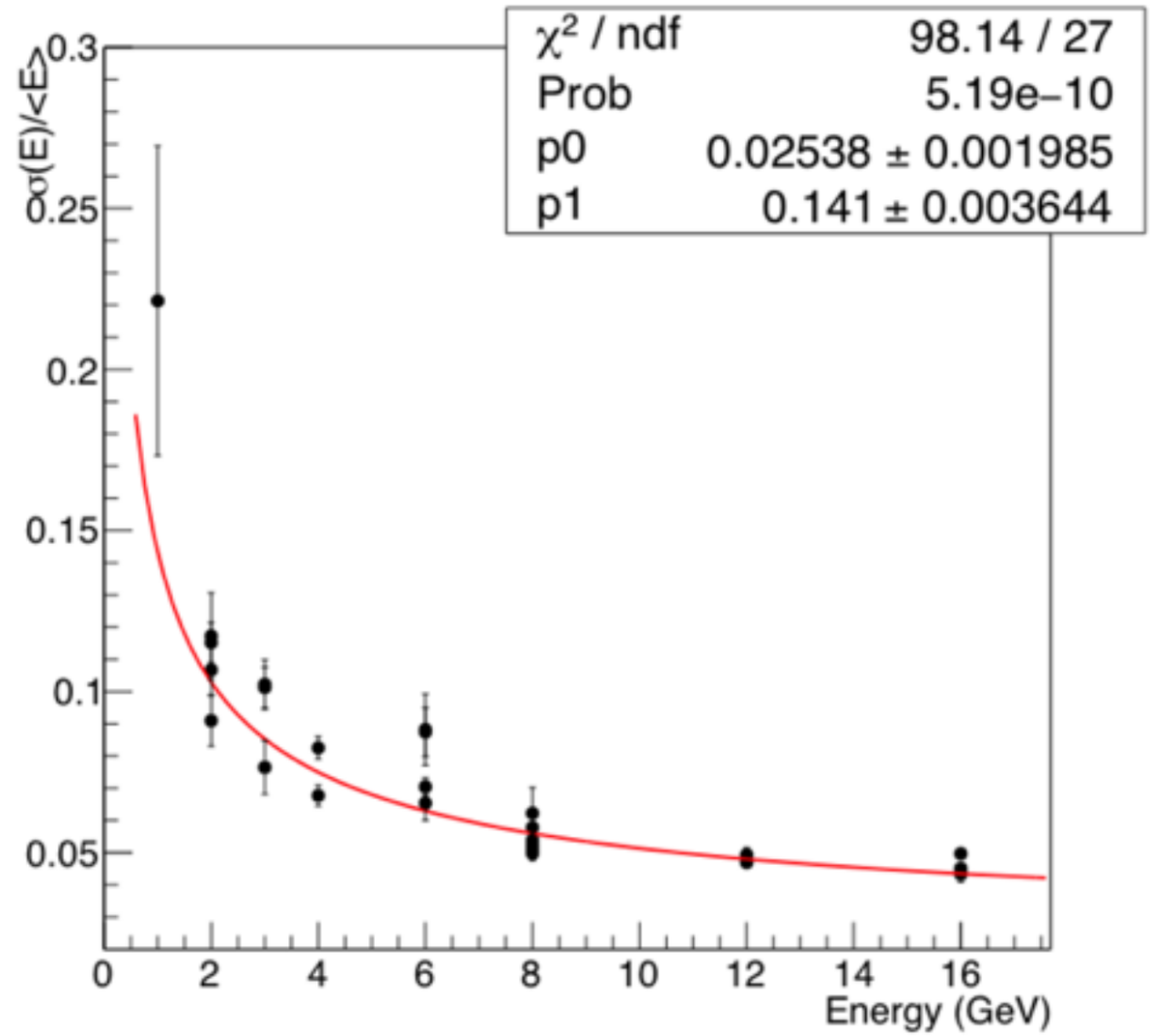
EMCAL Analysis:

Resolution and linearity for UIUC eta =0



several data points show different runs

Links to detailed run notes:

https://wiki.bnl.gov/sPHENIX/index.php/T-1044/EMCal_good_run_note#First_energy_scan

https://wiki.bnl.gov/sPHENIX/index.php/EMCalAnalysis#Energy_Resolution_and_Linearity_3

Paper Plot Candidates

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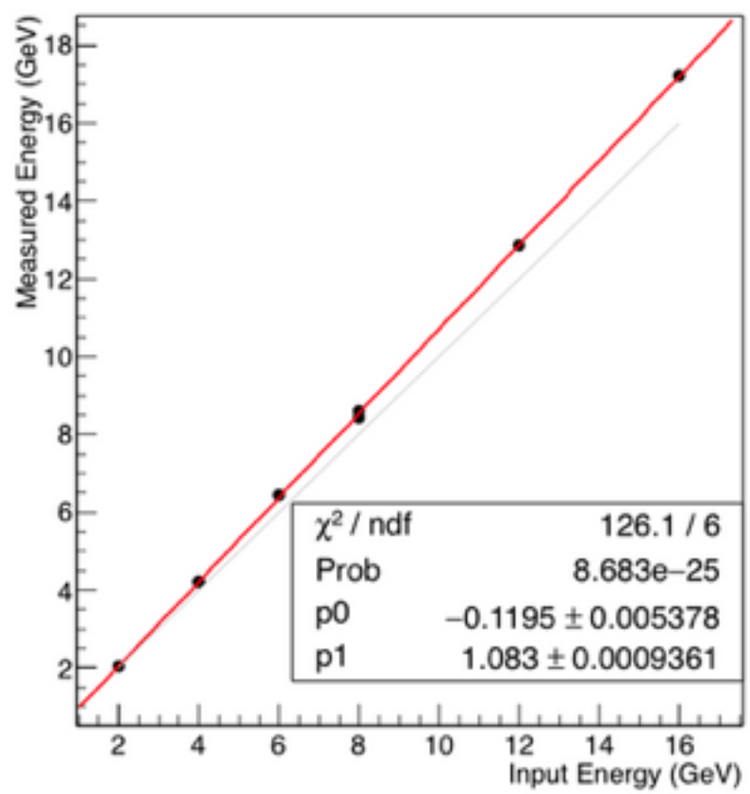
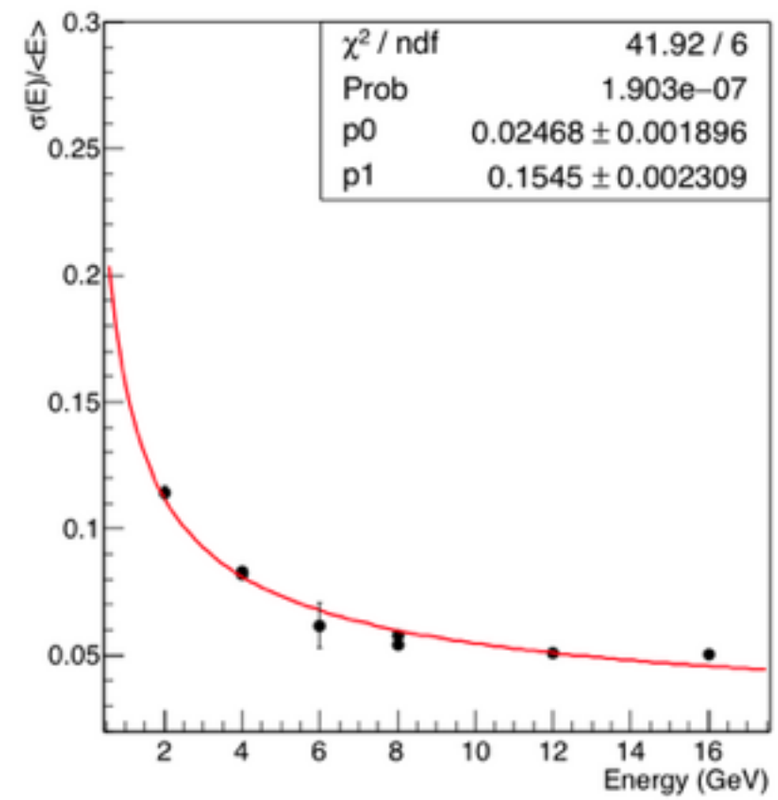
EMCAL Analysis:

Resolution and linearity
for UIUC eta =0.9





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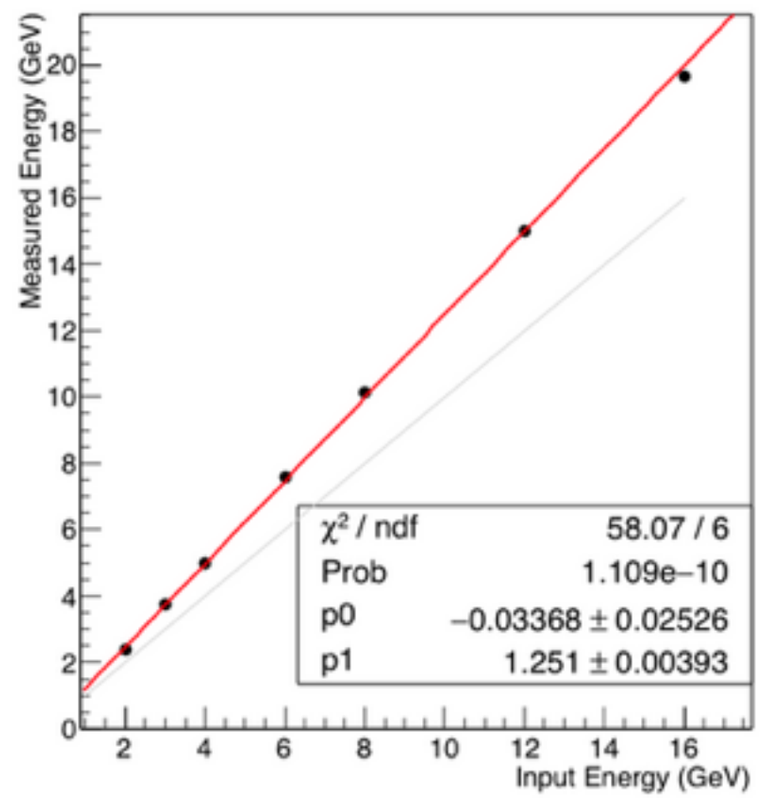
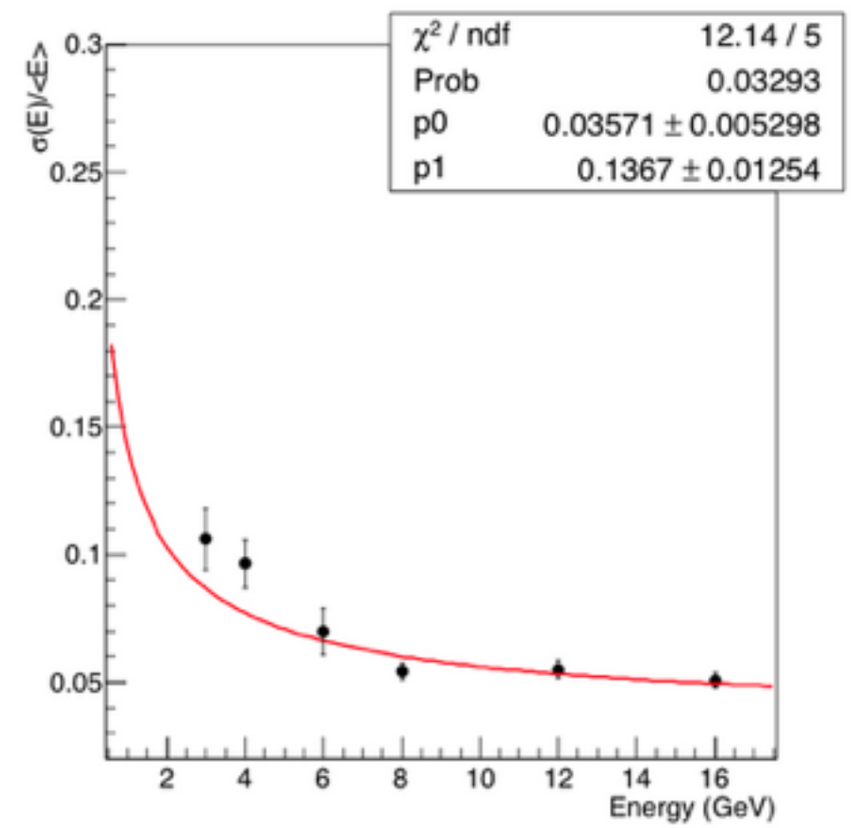
EMCAL Analysis:

Resolution and linearity for THP





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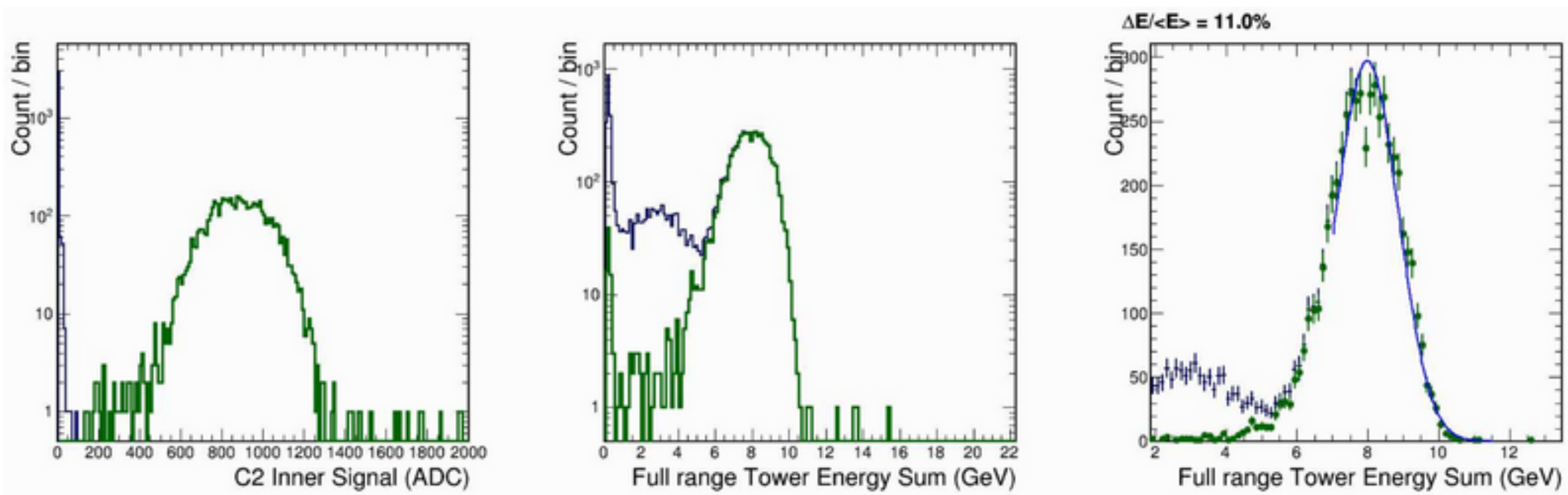

CEMC Energy sum check for run 2609, -8 GeV beam

Links to detailed run notes:

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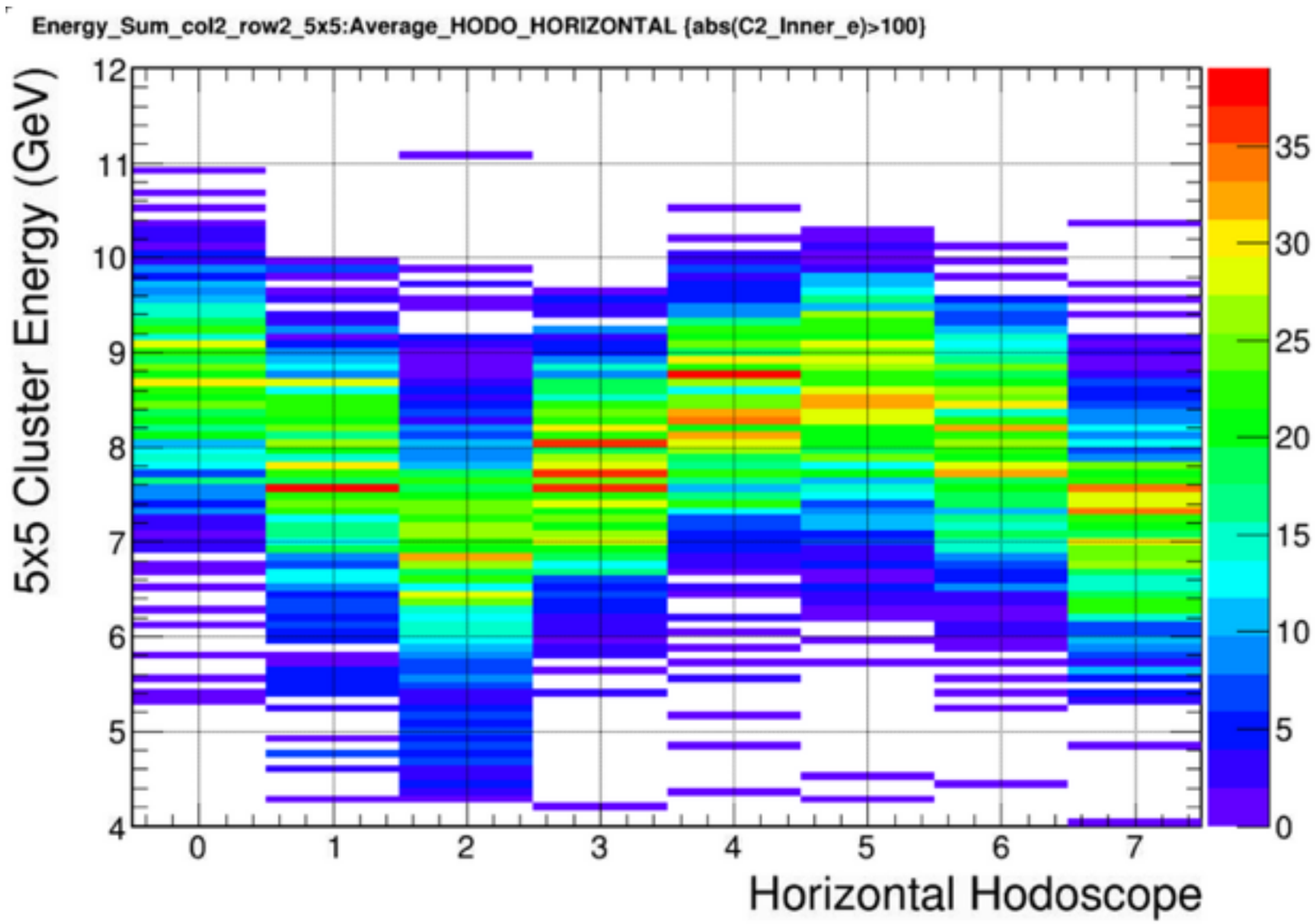
EMCAL Analysis:

CEMC Energy sum VS horizontal hodoscope hit location for run 2609, showing 20% Peak-peak variation, -8 GeV beam



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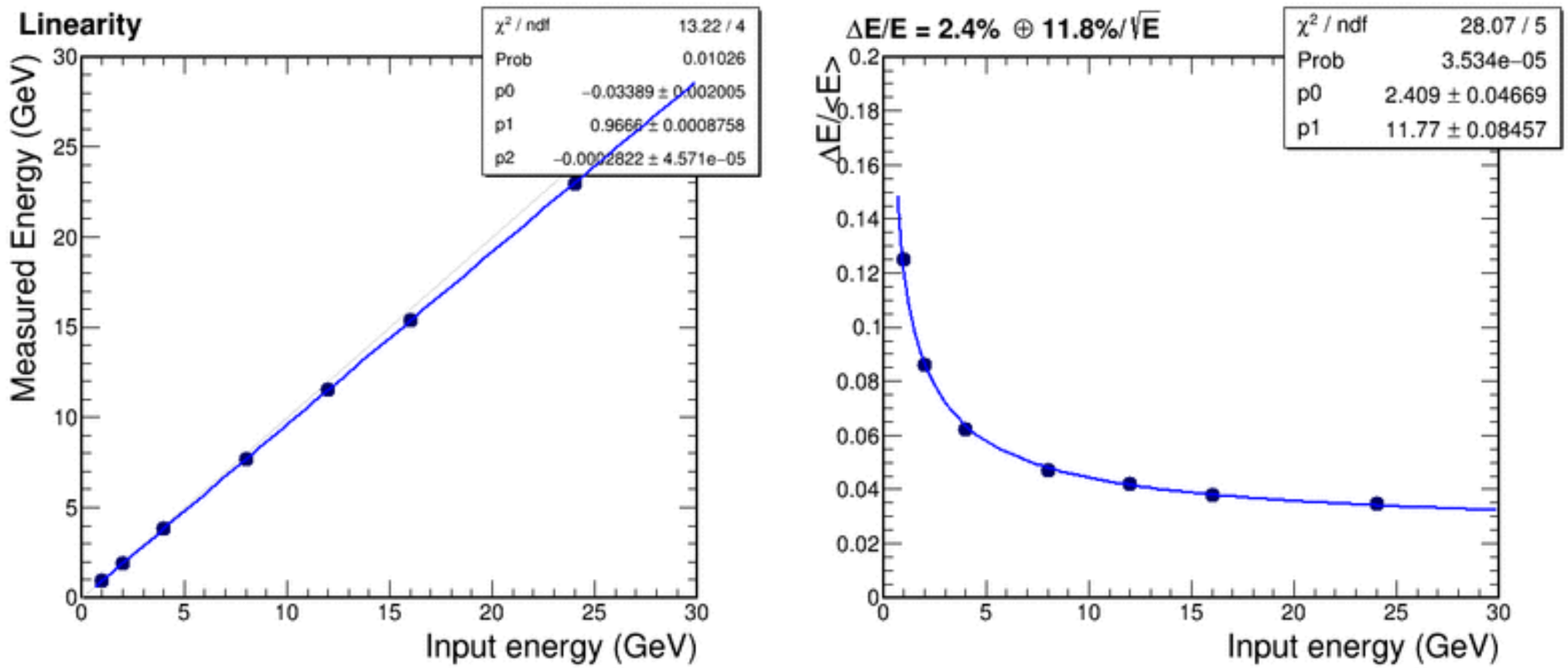

simulation 15 degree nosedown EMCAL resolution and linearity

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Paper Plot Candidates

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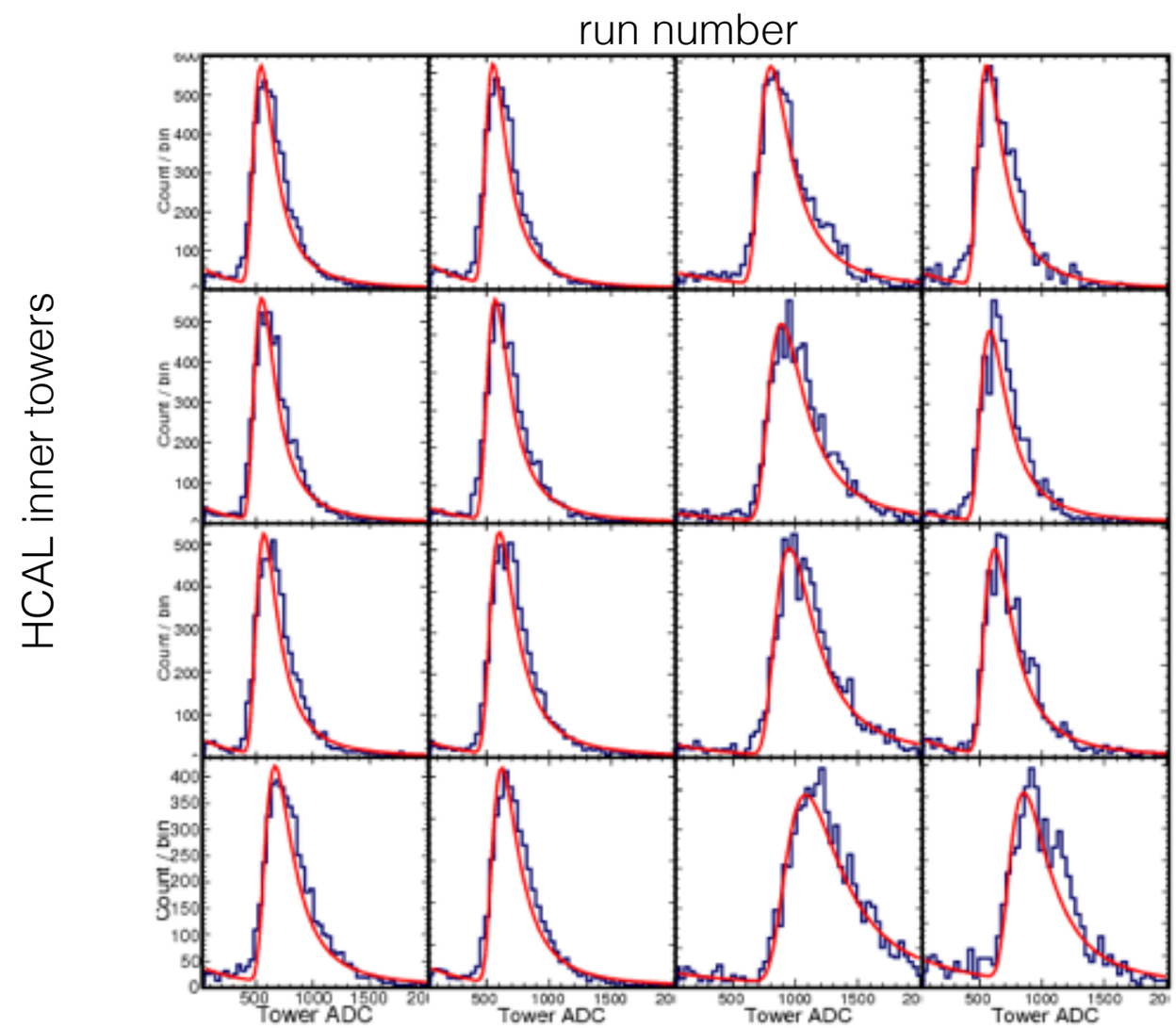
HCAL Analysis:

Cosmic MIP peaks in the HCAL inner towers used for calibration



Link to sPHENIX HCAL meeting Aug 23,2016:
https://indico.bnl.gov/getFile.py/access?contribId=0&resId=0&materialId=slides&confId=2348

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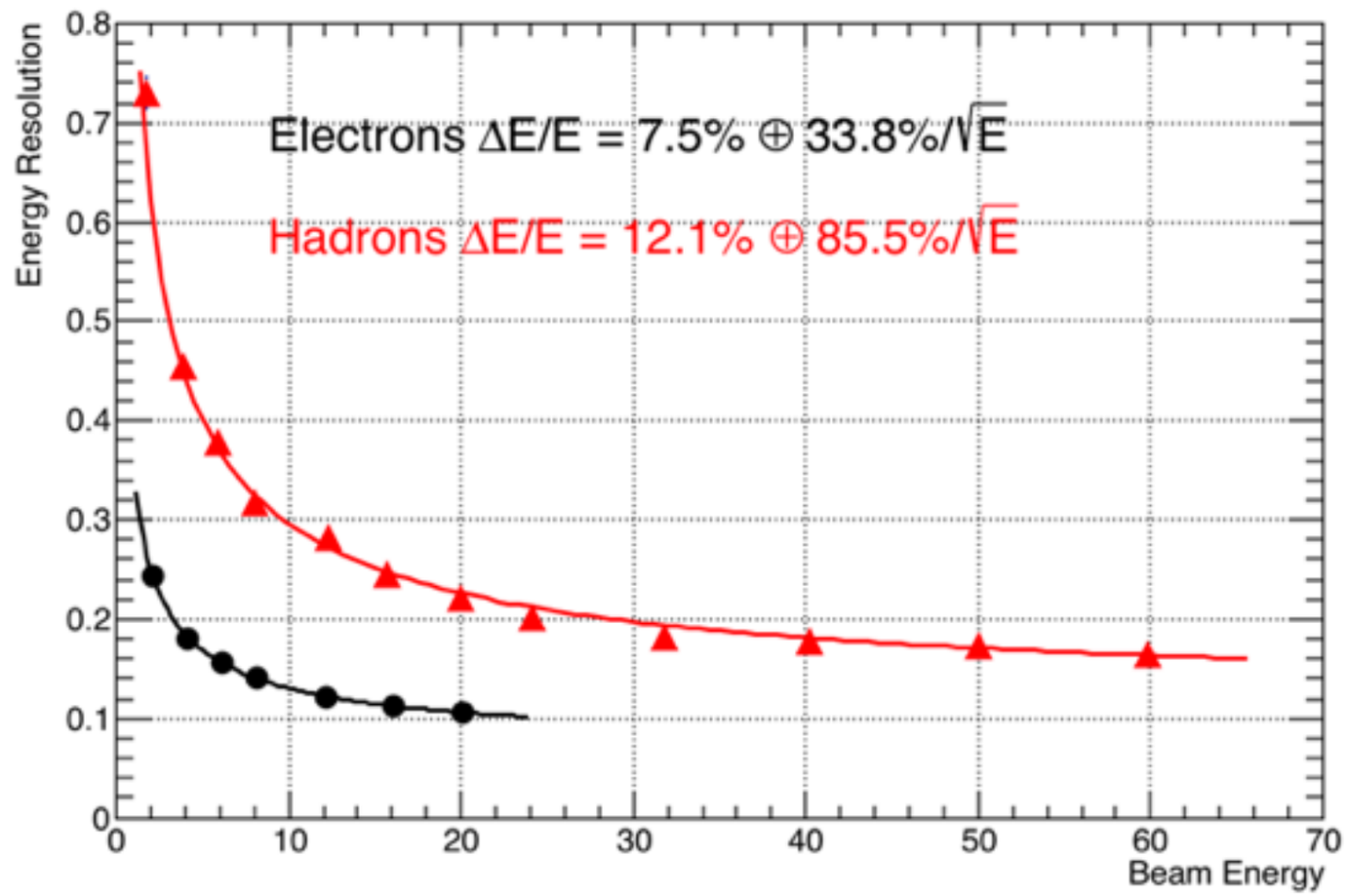
HCAL Analysis:

Electron and hadron resolution and linearity for HCAL



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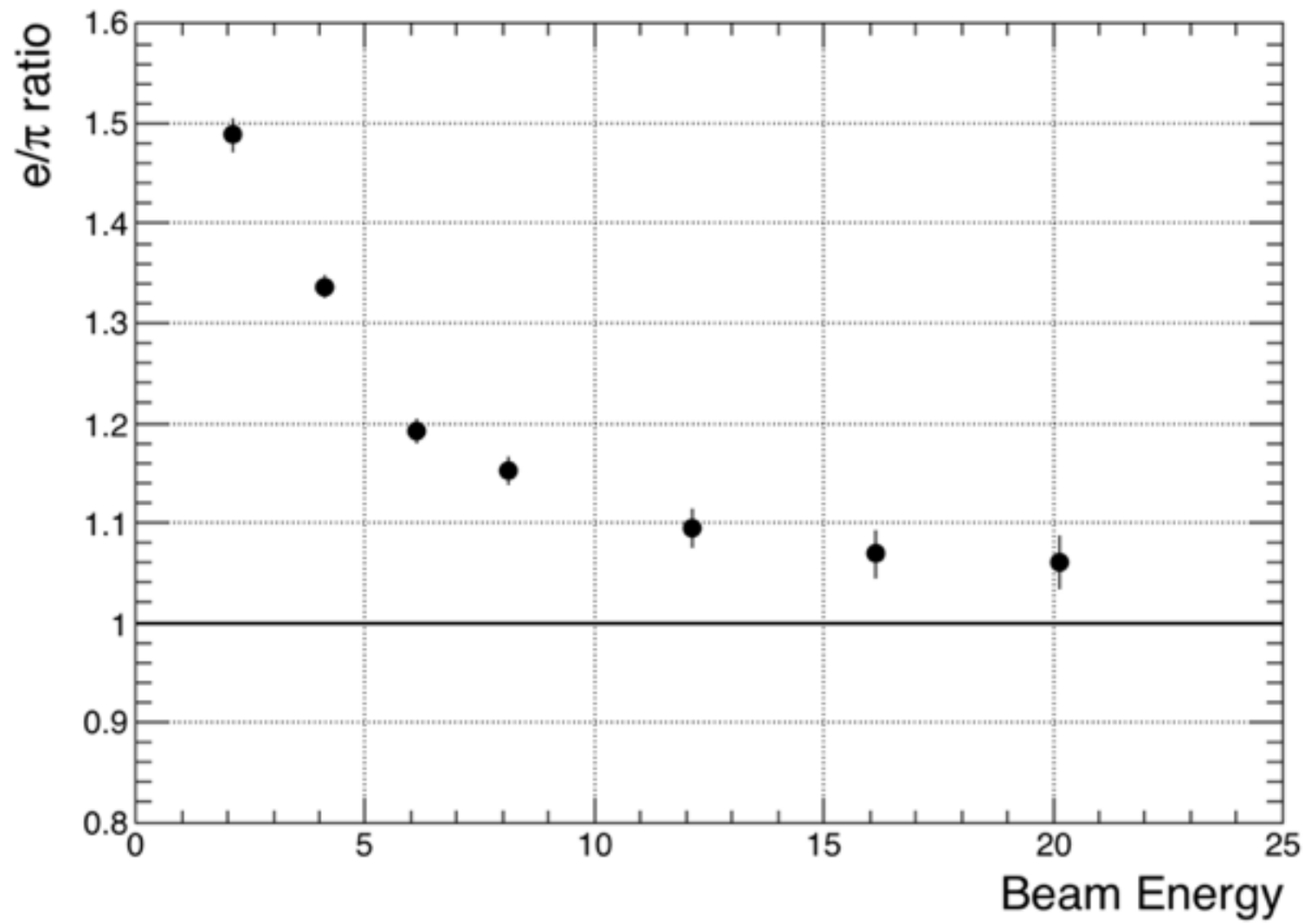

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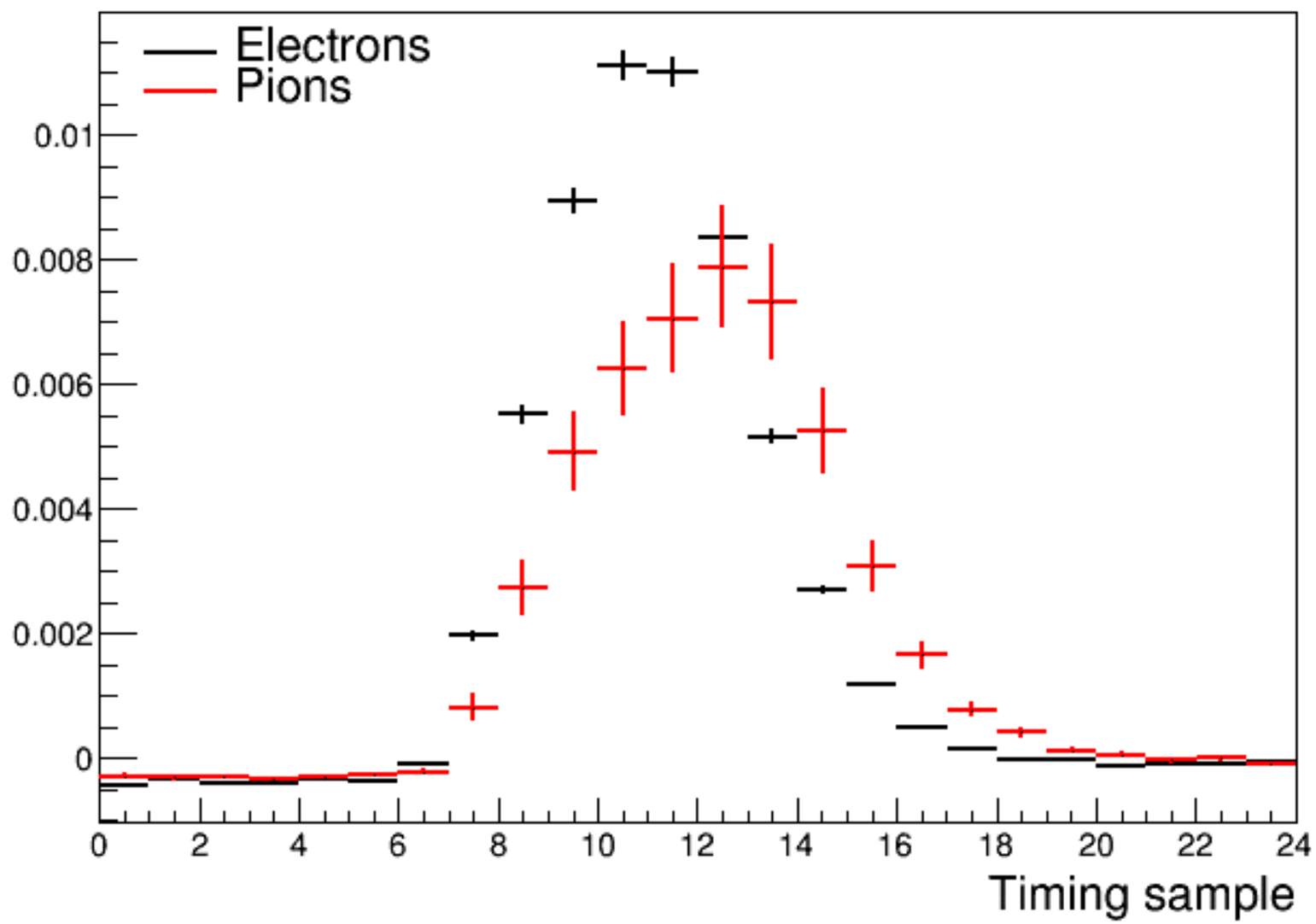
HCAL Analysis:

Timing line shape of electrons and hadrons



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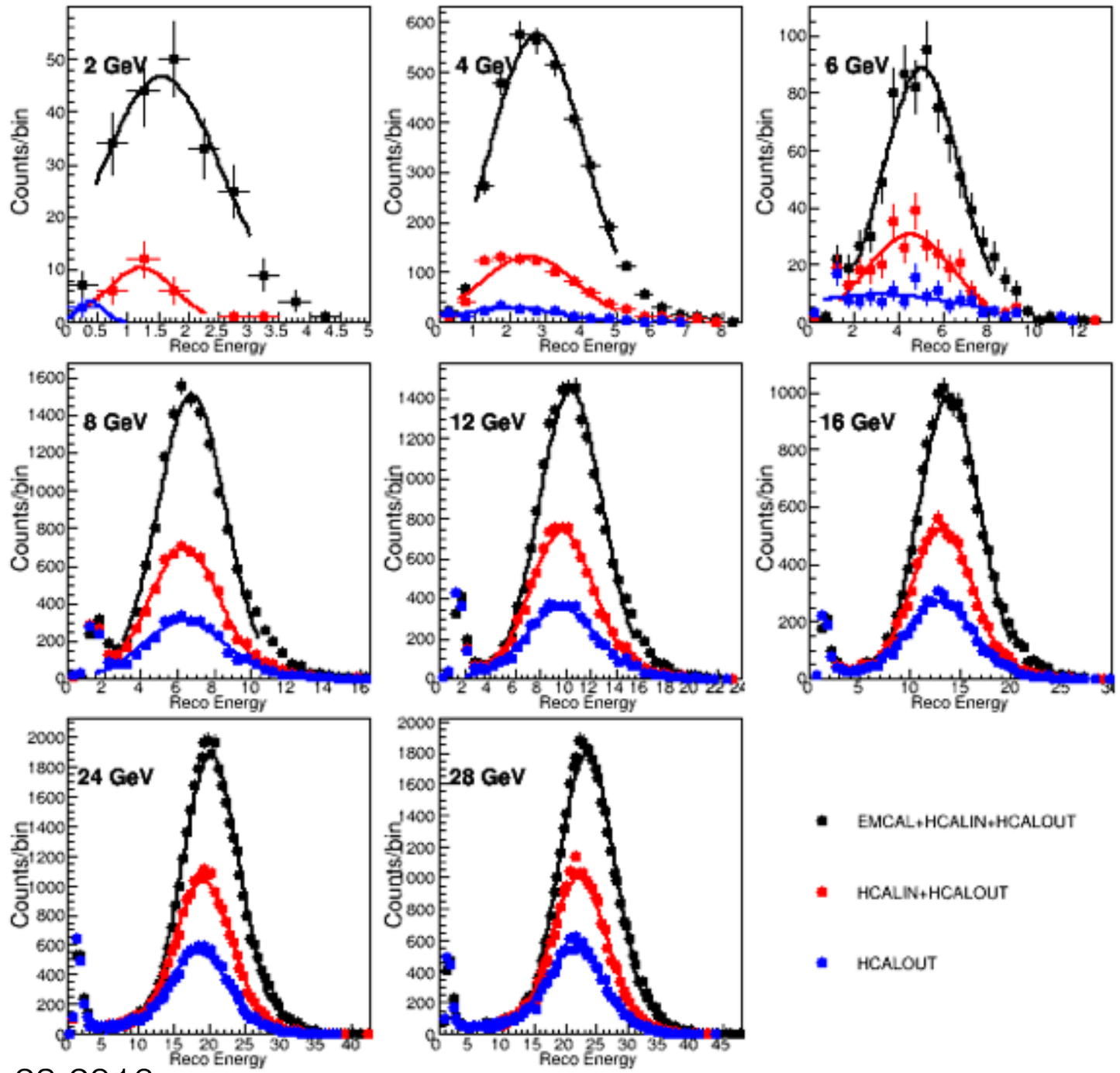
HCAL Analysis:

Hadron signal shape



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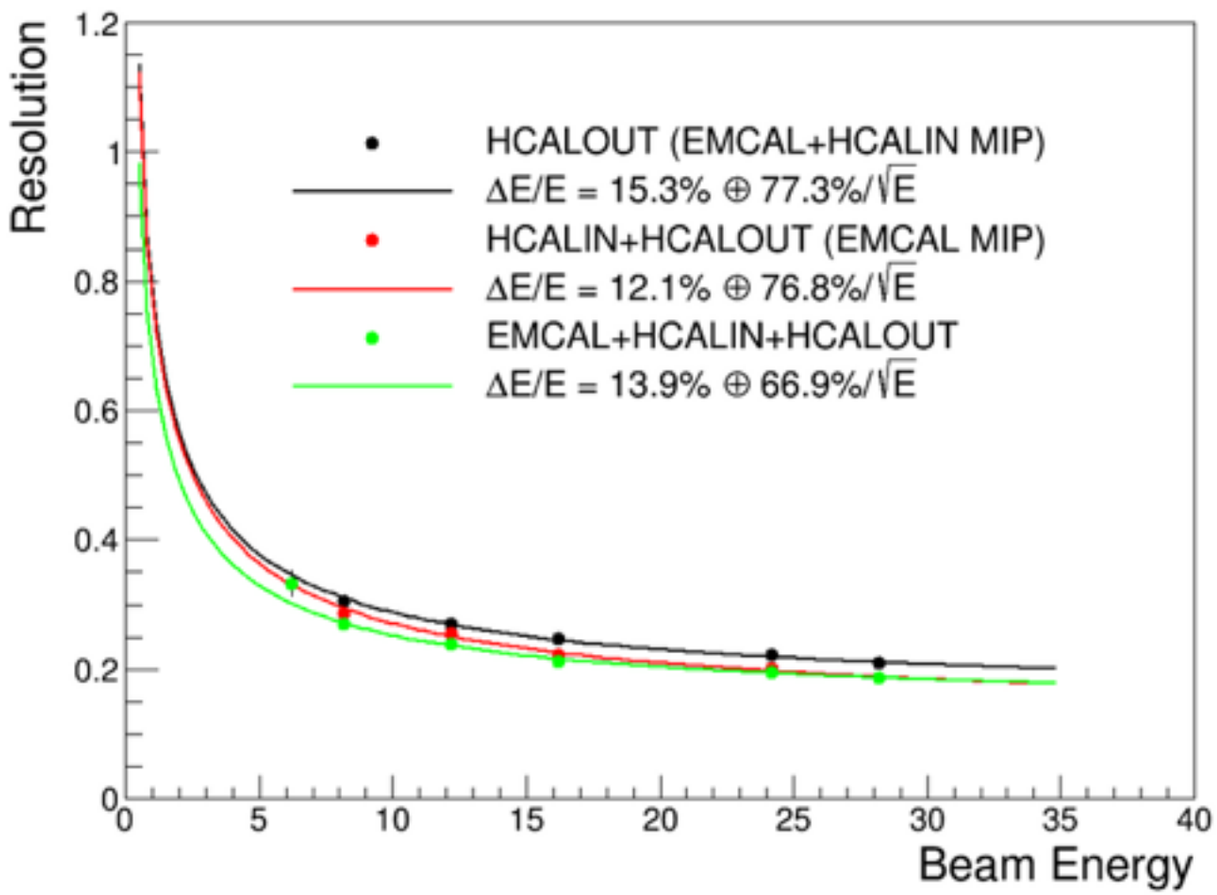
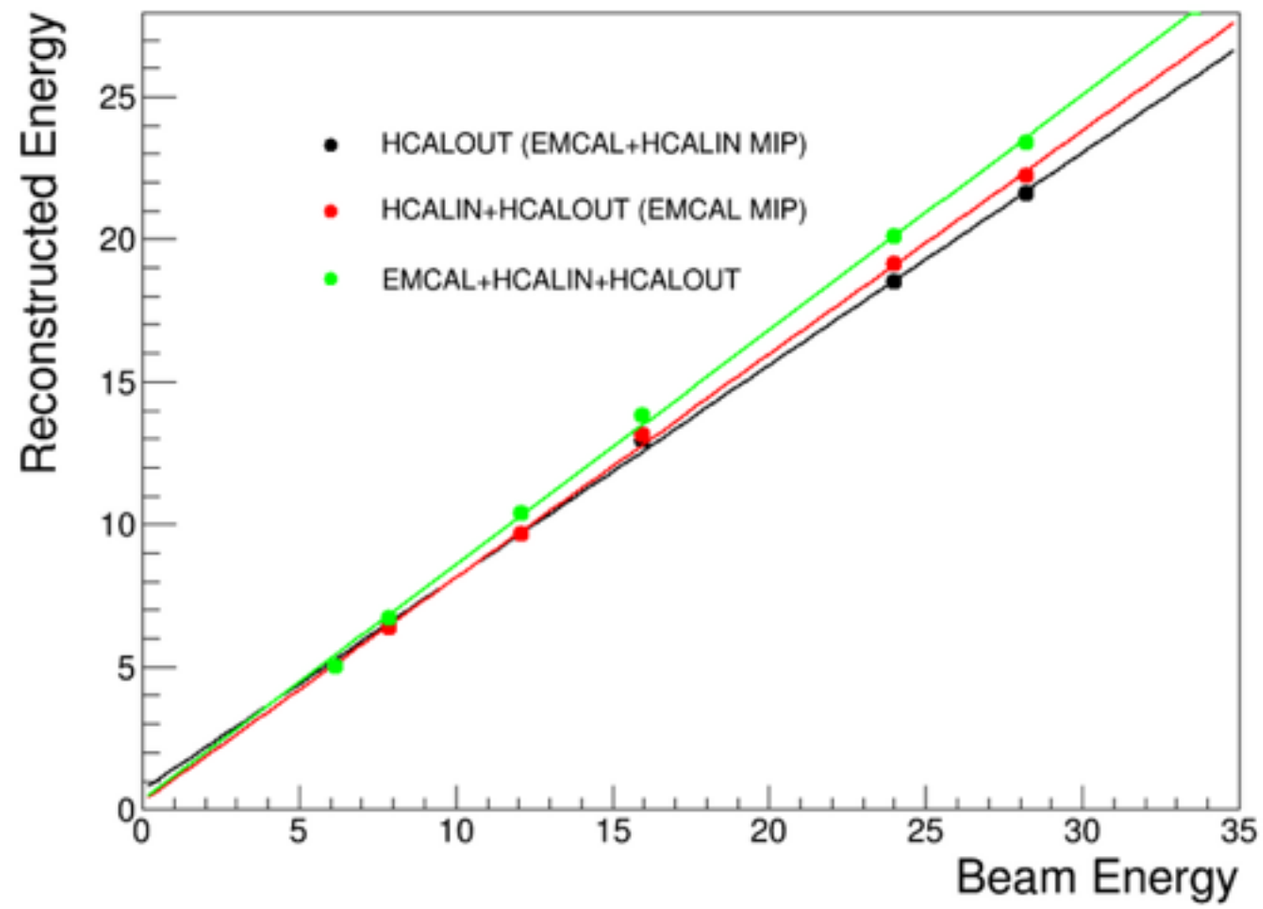
HCAL Analysis:

Position dependent resolution and linearity





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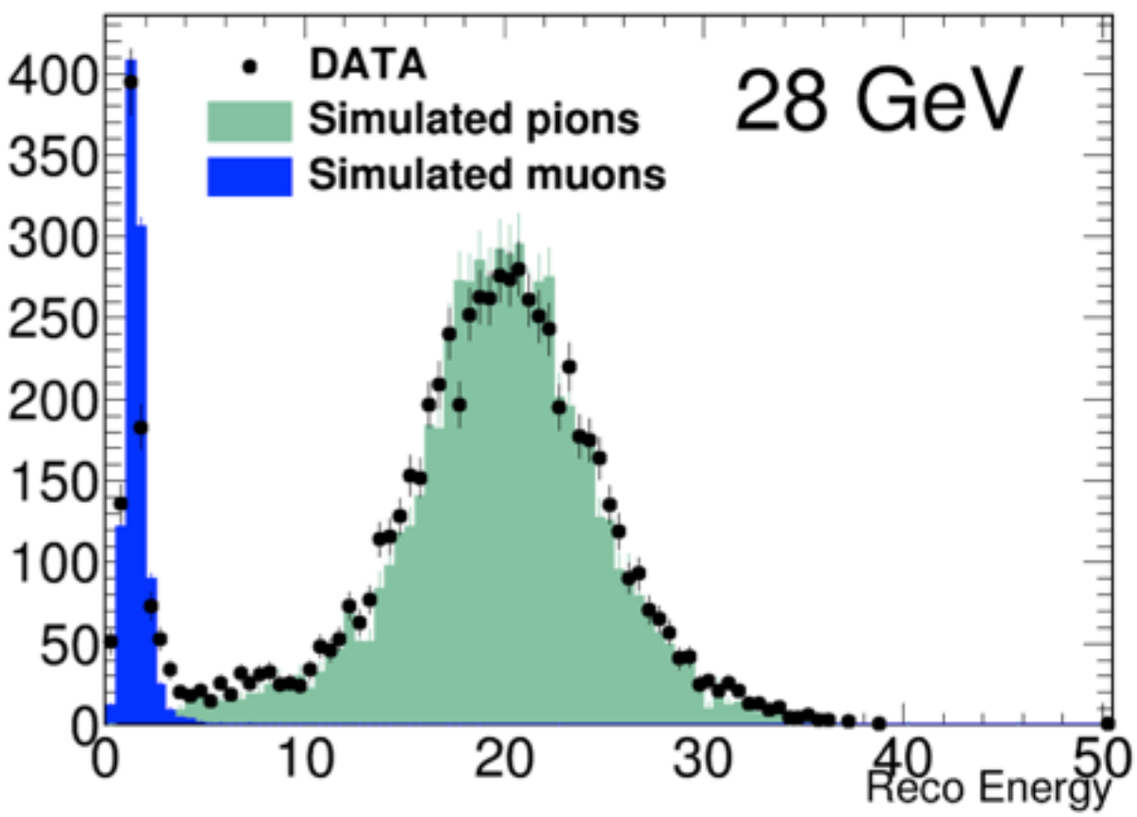
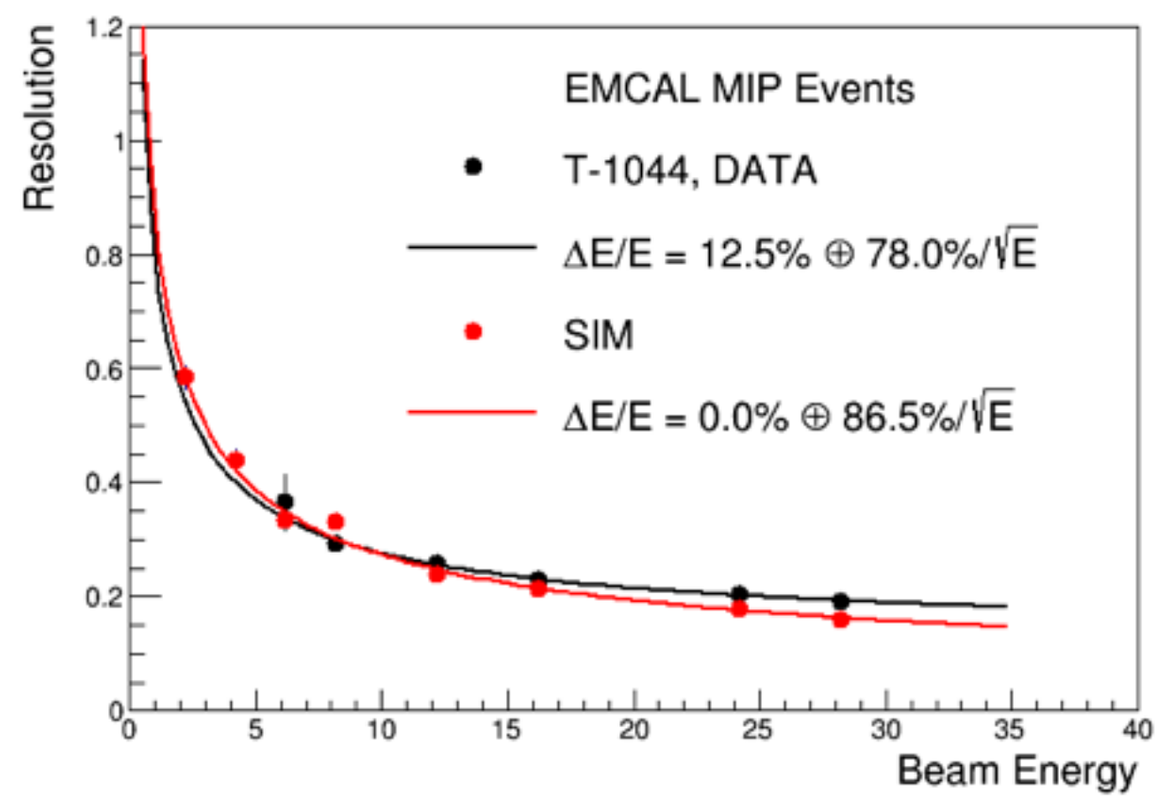
HCAL Analysis:

Simulation for resolution and linearity





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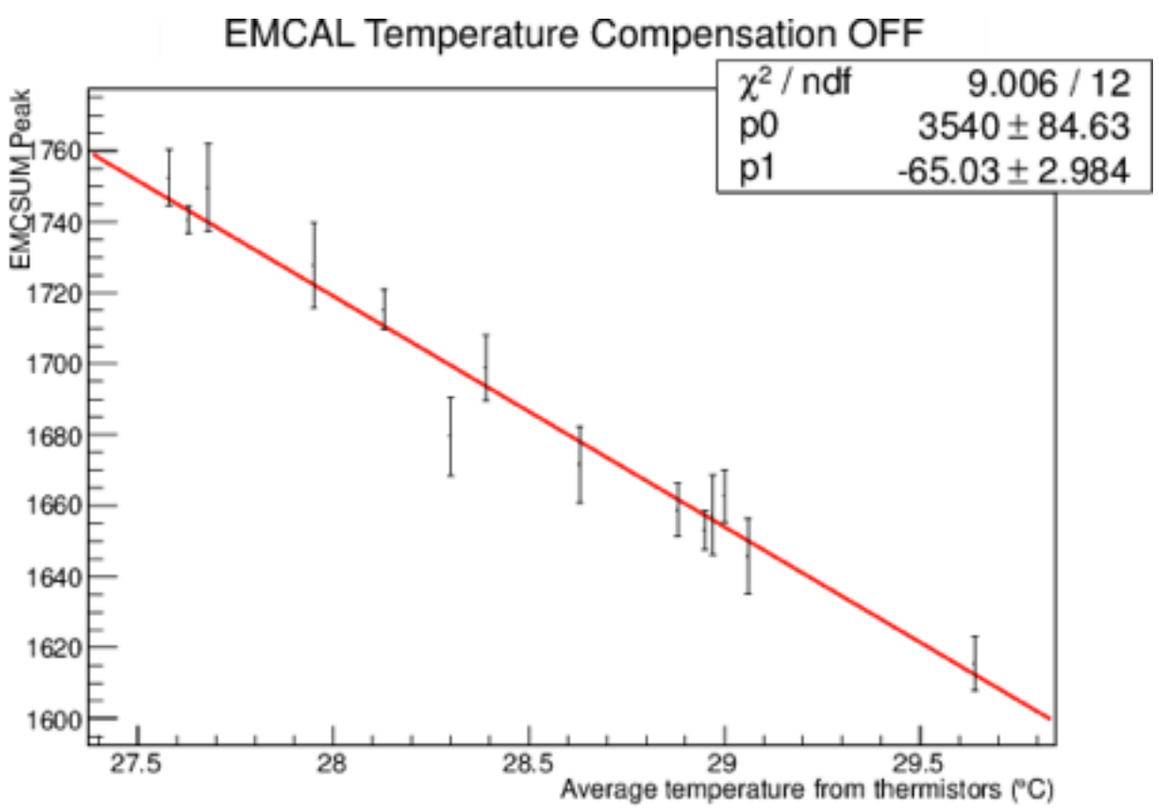
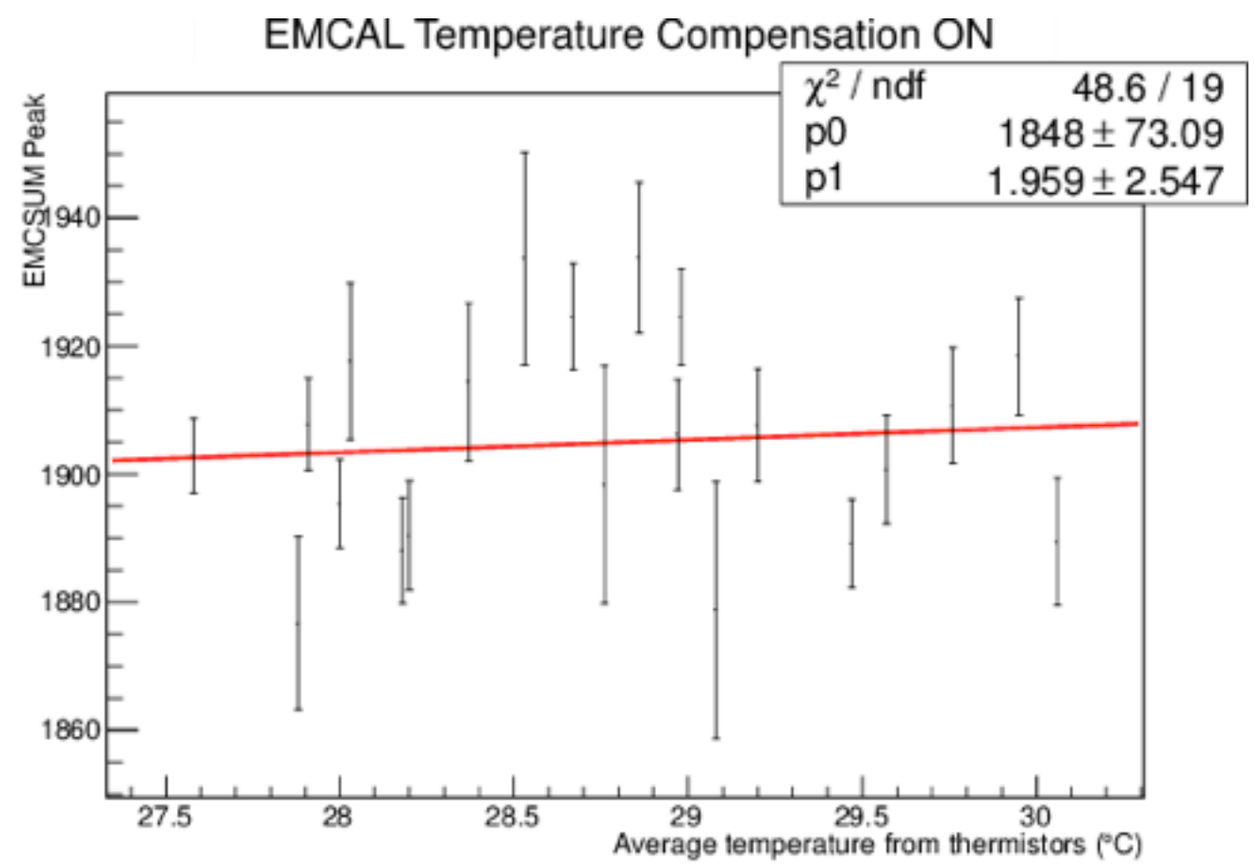
Readout: temperature compensation





https://wiki.bnl.gov/sPHENIX/index.php/T-1044/EMCal_good_run_note#Real-time_temperature_compensation

Paper Timeline

- Initial paper draft in overleaf
- We are asking for initial feedback on plot candidates/paper outline by Sept 7,2016
- We plan to have the first draft ready by September 15, 2016