Plot Approval for DNP 2022

Anthony Hodges

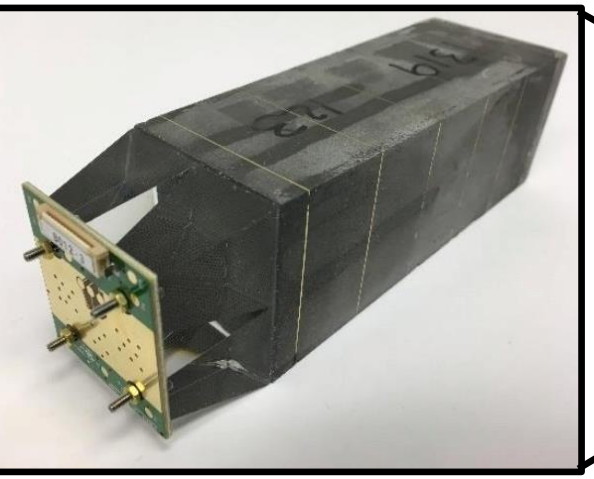
EMCal Meeting

Friday, October 21st, 2022

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Position-Dependent Response

- EMCal blocks + electronics are non-homogenous, leads to position dependent response
- Position-dependent correction currently in sPHENIX simulation accounts for and corrects this



sPHENIX 2003.13685

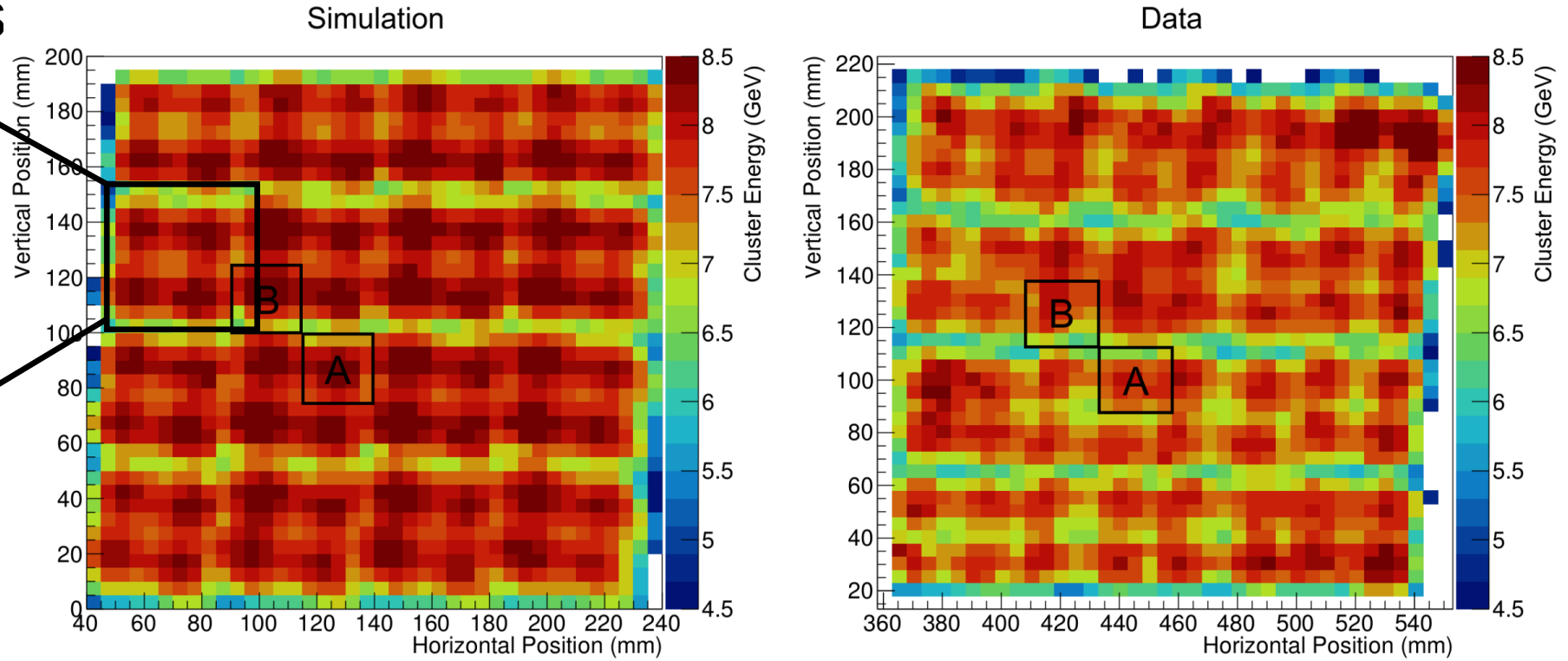
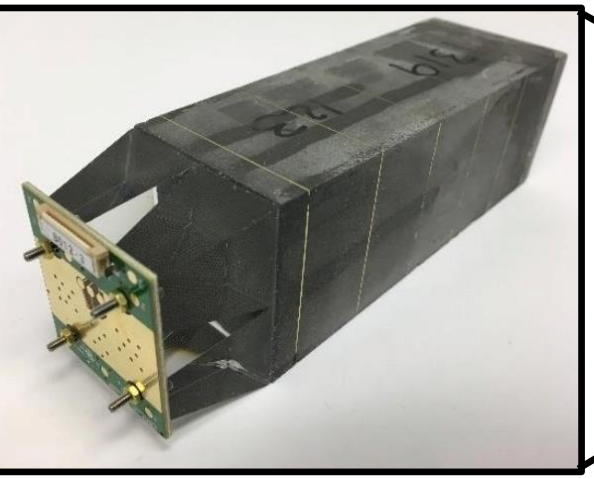


Fig. 6. Cluster Energy vs. Position for simulations (left panel) and data (right panel). The results correspond to an input energy of 8 GeV. Towers A and B are shown in black squares.

Position-Dependent Response

- Undergraduates Amanda Leveritt and Aras Repond spent summer studying and validating correction using simulated photons in EMCal
- Amanda Leveritt requests to show the following plots at DNP 2022



sPHENIX 2003.13685

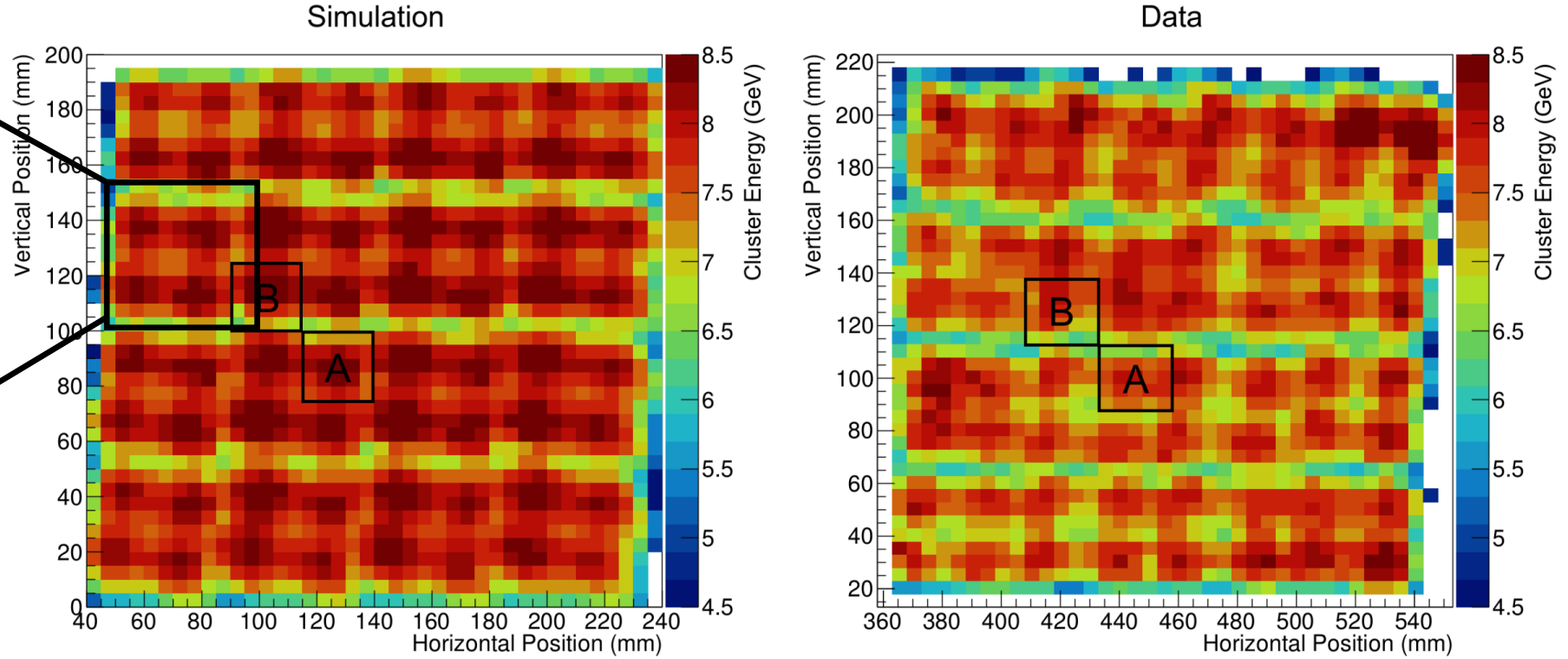
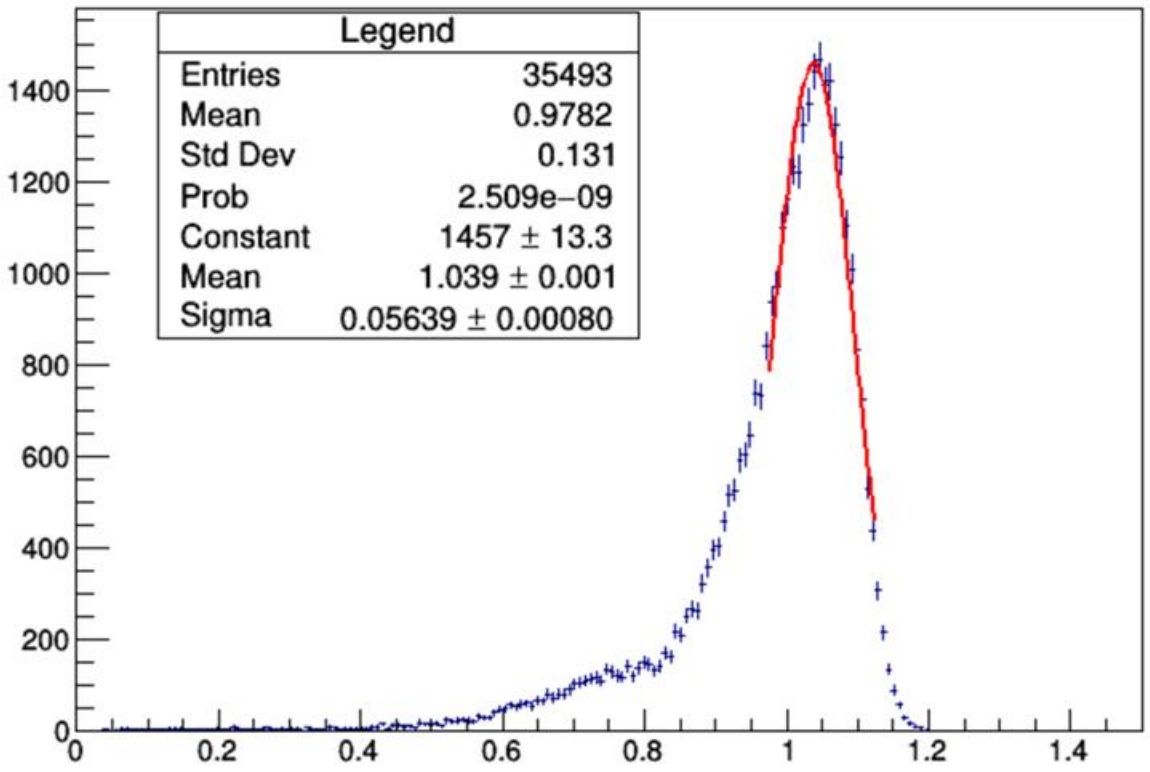


Fig. 6. Cluster Energy vs. Position for simulations (left panel) and data (right panel). The results correspond to an input energy of 8 GeV. Towers A and B are shown in black squares.

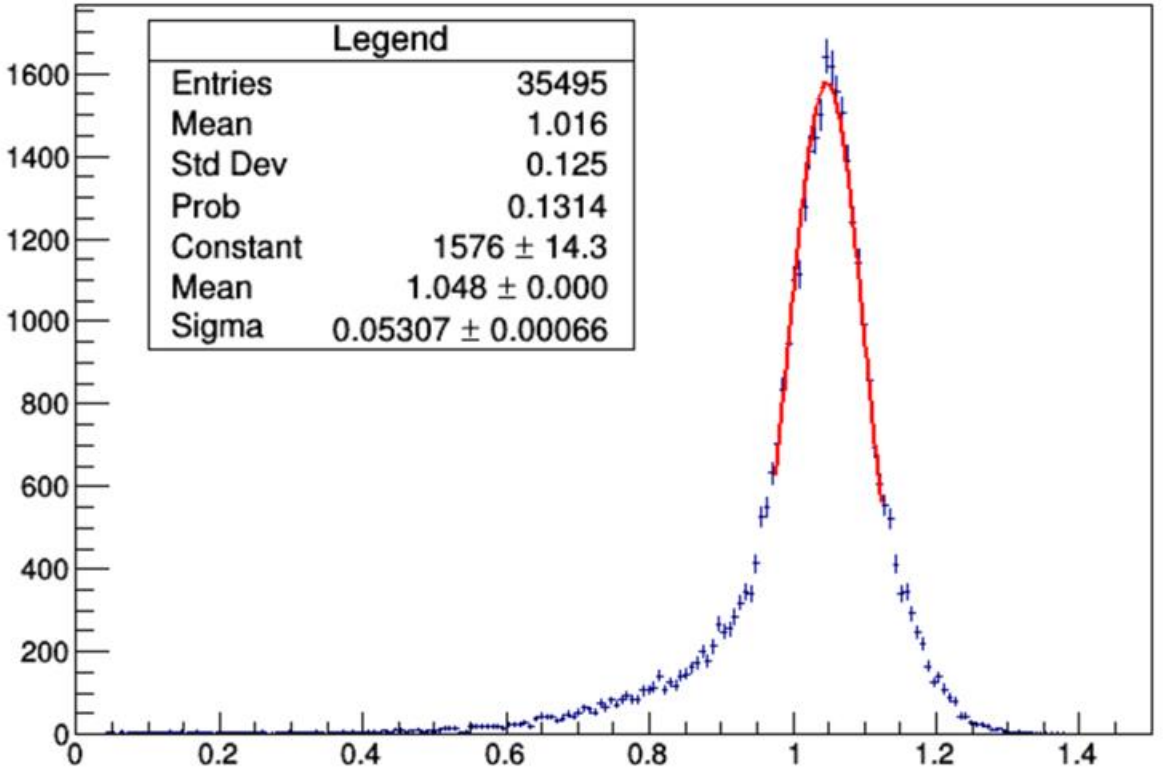
EMCal Response

- Undergraduate Amanda Leveritt analyzed the response of an entire sector
- Shown at previous EMCal/Calibrations meeting

No Correction



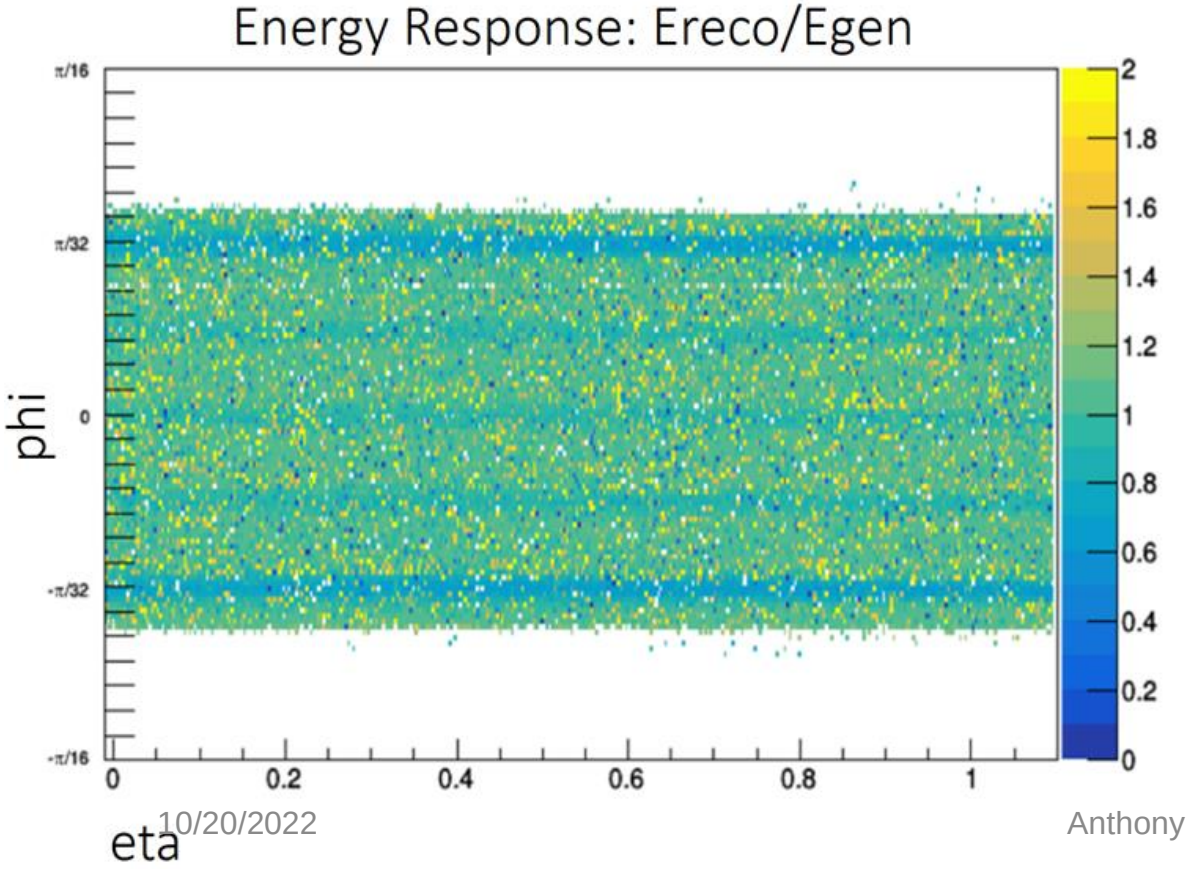
With Correction



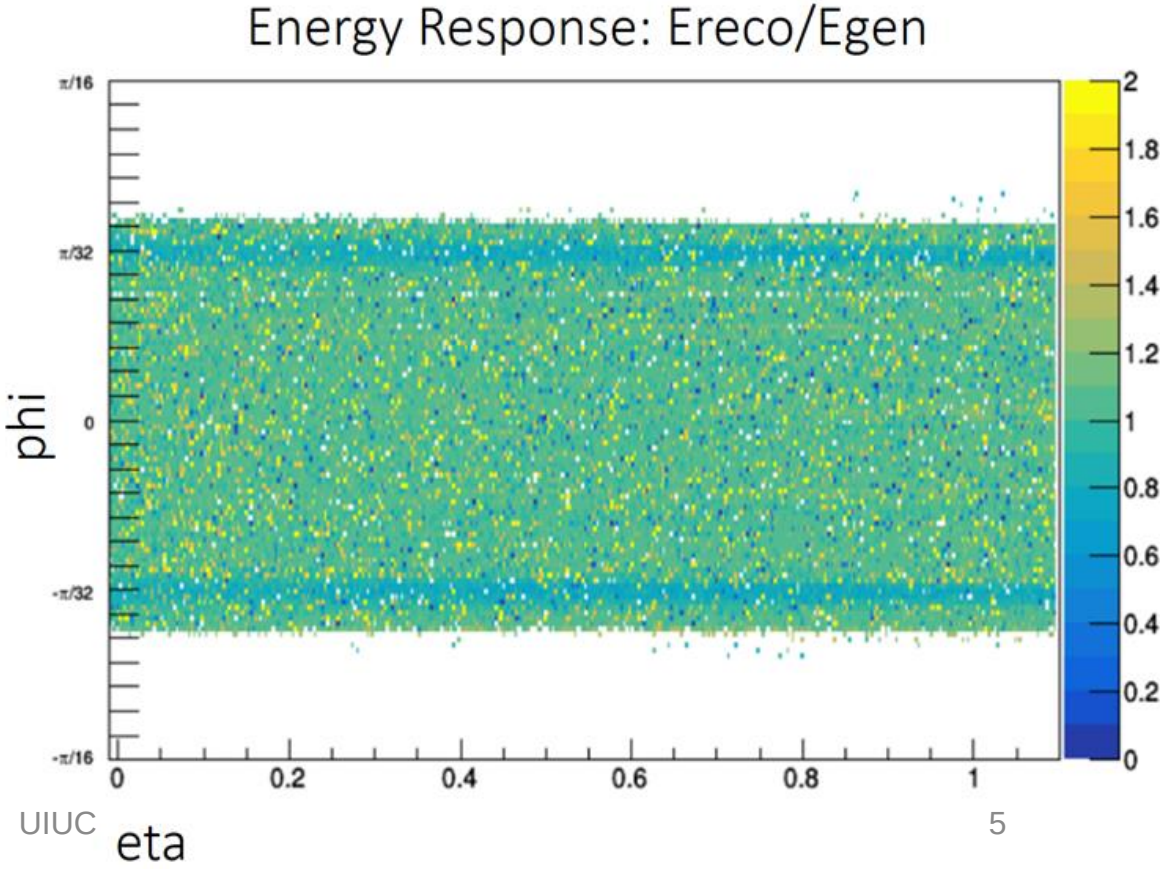
Position-Dependent Correction Validation

- Plot of impact of position dependent correction.
- Version currently on poster.
- Made by Amanda Leveritt, poster presenter

No Correction



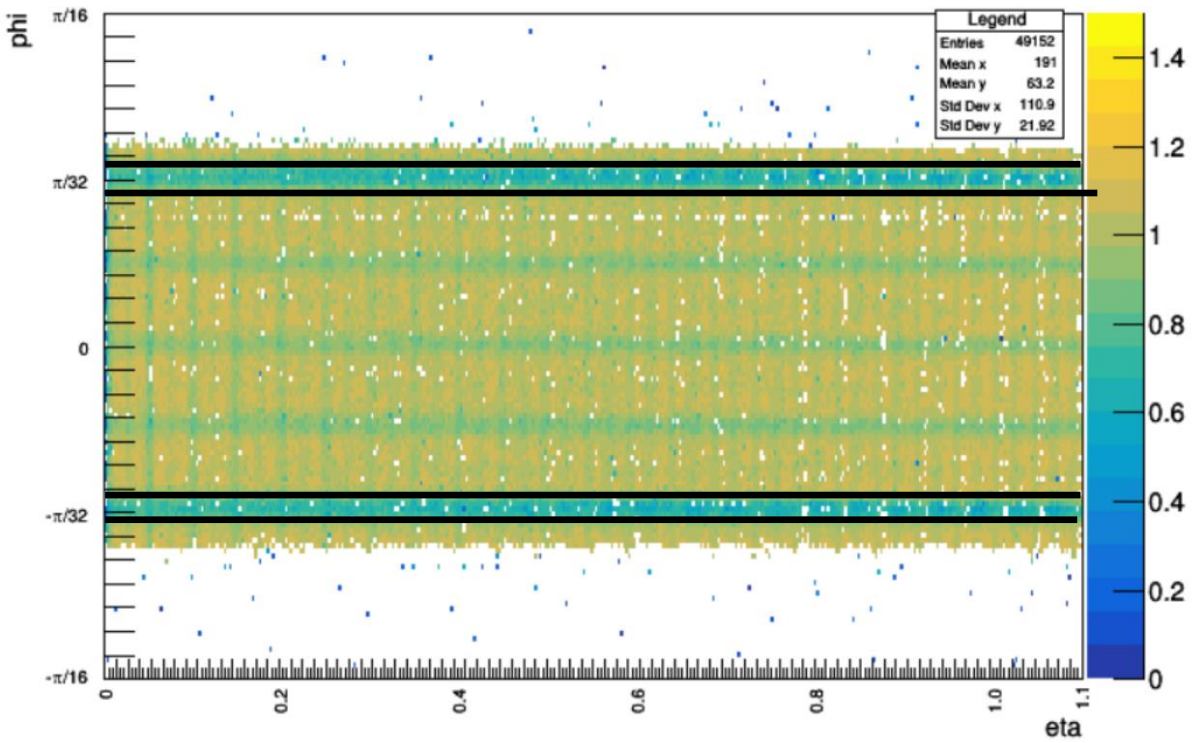
With Correction



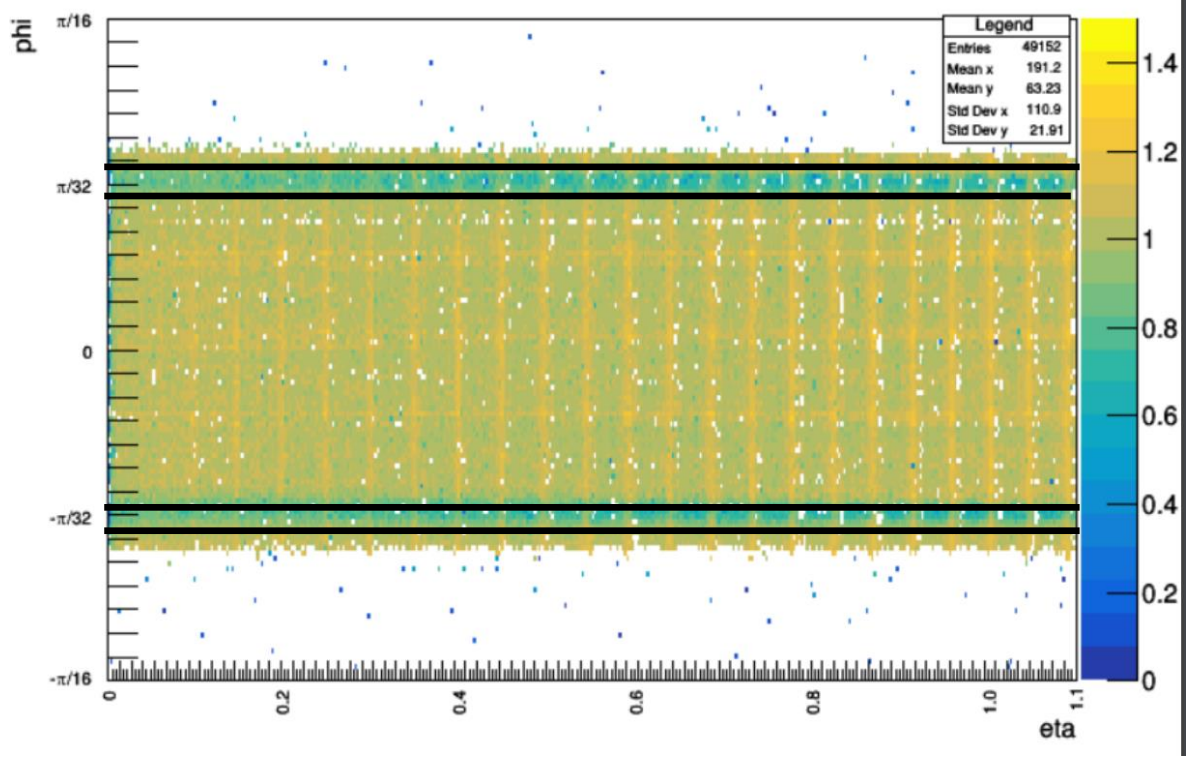
Position-Dependent Correction Validation

- Plot of impact of position dependent correction shown at previous EMCal meeting.
- Made by Aras Repond

With **No** Correction



With Correction



Energy Response

- Position dependent correction removes large fluctuations within the sector across all η.
- Shown at previous EMCal Meeting