

UCR

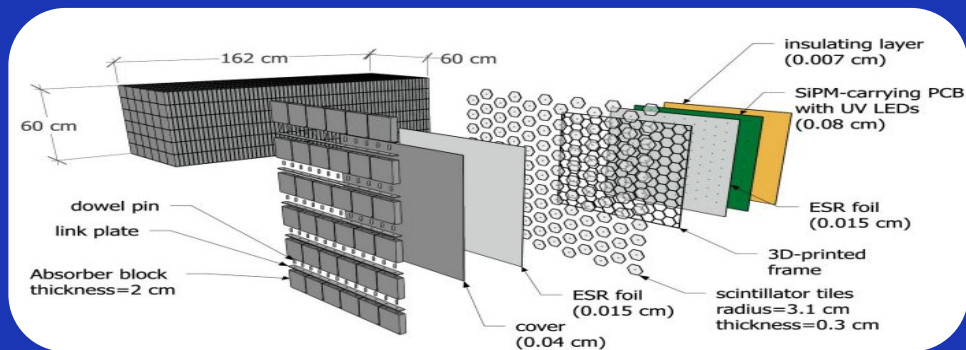
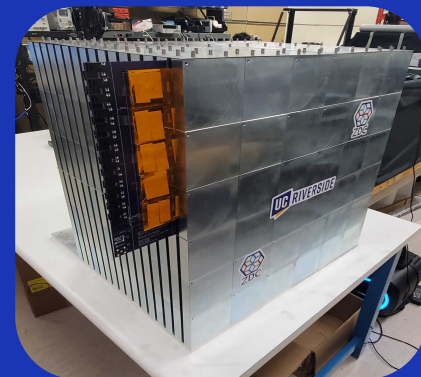
# Position Reconstructions with ZDC Simulations

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1/8/25



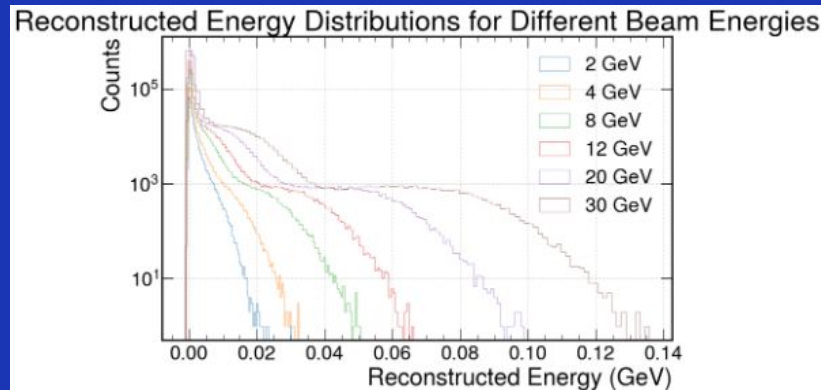
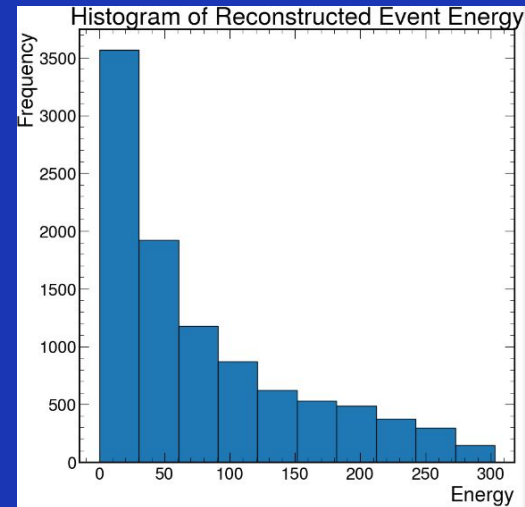
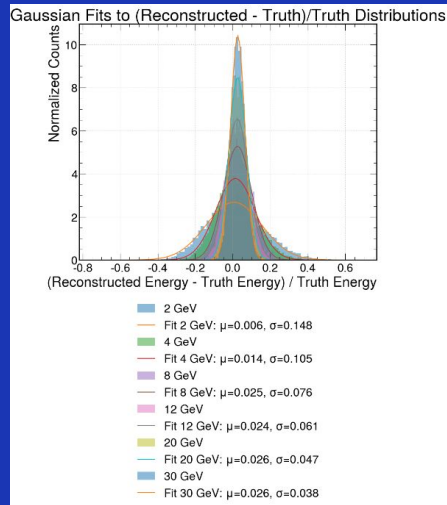
# ZDC

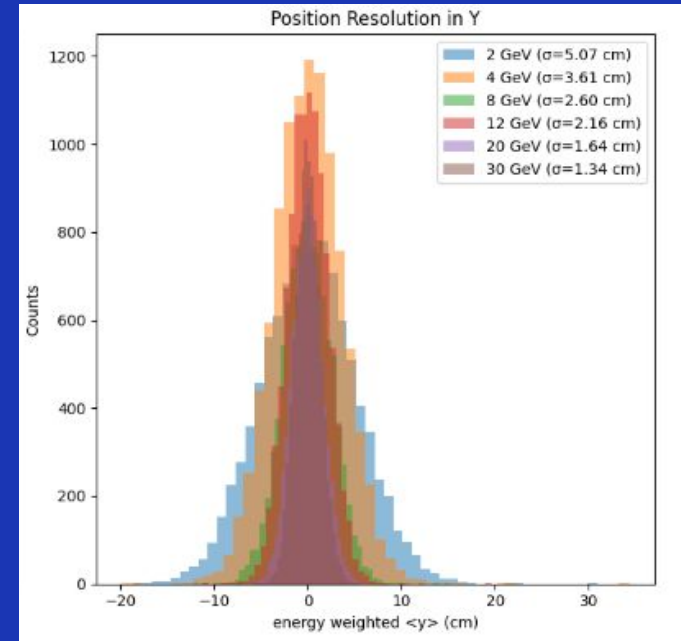
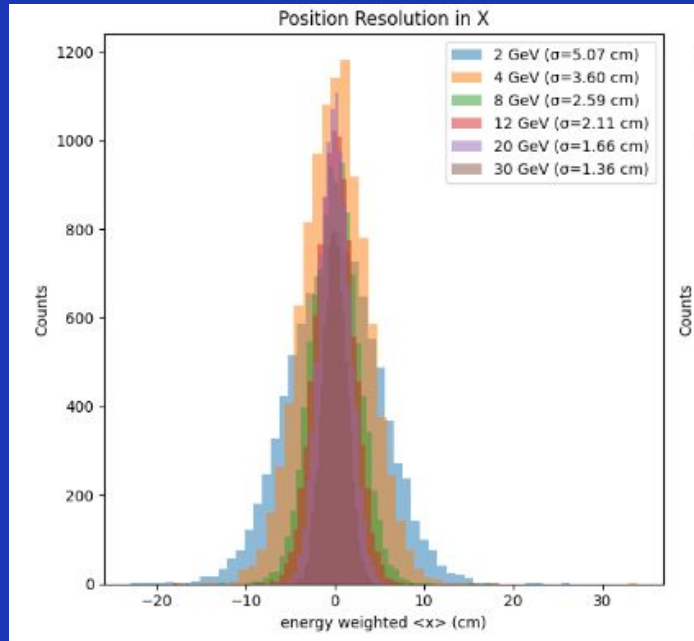
- ZDC
  - dimensions:  $60 \times 60 \text{ cm}^2$
  - 64 layers
  - Each layer is again mainly 2 cm of steel + 0.3 cm of scintillator.
  - Each scintillator is a  $5 \times 5 \text{ cm}^2$  square. Each scintillator is a hexagon with a radius of 3.1 cm



# Recap of Previous Data Analysis

- Plotted the reconstructed energies of the ZDC
- Which demonstrated good single-neutron energy responses & resolution





- Helps quantify the detector's ability to accurately determine the position of particles based on the energy deposits in the calorimeter cells

# Position versus Energy

- Smaller sigma values  $\rightarrow$  better resolution
- Helps guide what the error bars would be for the given energies
- Will have a sharper image at higher energies

