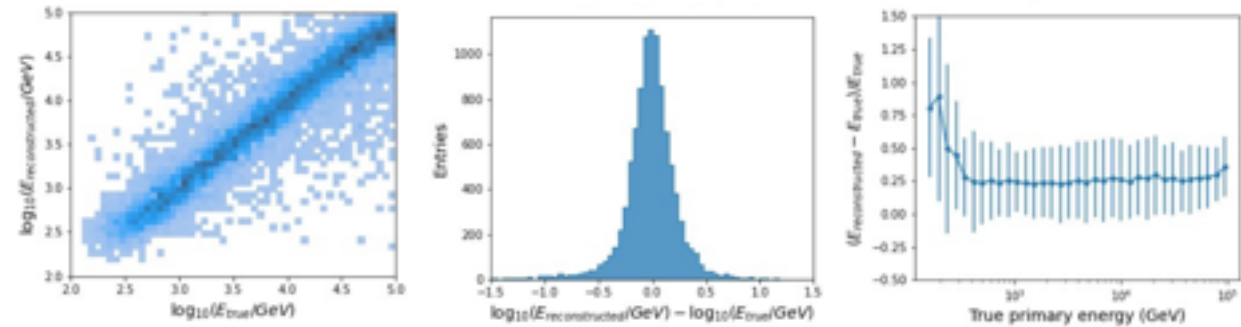


Objectives

1. Reconstruct the total CR primary energy.
2. Check and calibrate the sampled energy of the calorimeter.
3. Identify CR events from among noise events.

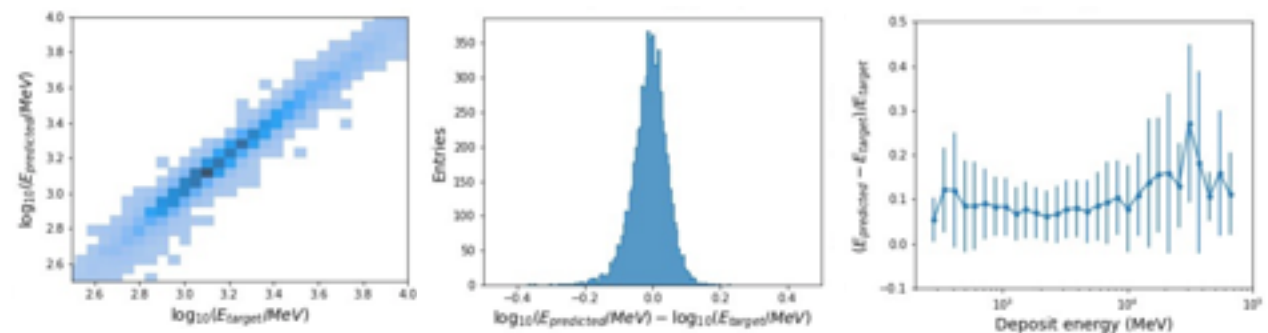


From left to right: Distribution of reconstructed energy as a function of true energy; Residual distribution of the logarithm of the reconstructed energy; Relative energy resolution as a function of true energy.

1

Result for objective 1

- We achieved a resolution of as good as 25%. Better than 50% using traditional method for an on-orbit program.



From left to right: Distribution of predicted energy as a function of target energy; Residual distribution of the logarithm of the predicted energy; Relative energy resolution as a function of true deposited energy.

2

Result for objective 2

- We achieved an energy resolution as good as 8%.

Result for objective 3

- A true positive rate of 93.2% and a true negative rate of 99.4%.

	Actual True (CR)	Actual False (Noise)
Predicted Positive (CR)	True Positive = 93.2%	False Positive = 0.6%
Predicted Negative (Noise)	False Negative = 6.8%	True Negative = 99.4%

3

The confusion matrix of this classification model. Since we train the X-Z view and Y-Z view separately, we define that a CR event is one where both views have likelihoods of 50% or higher of being "CR like," otherwise the event is classified as noise.