

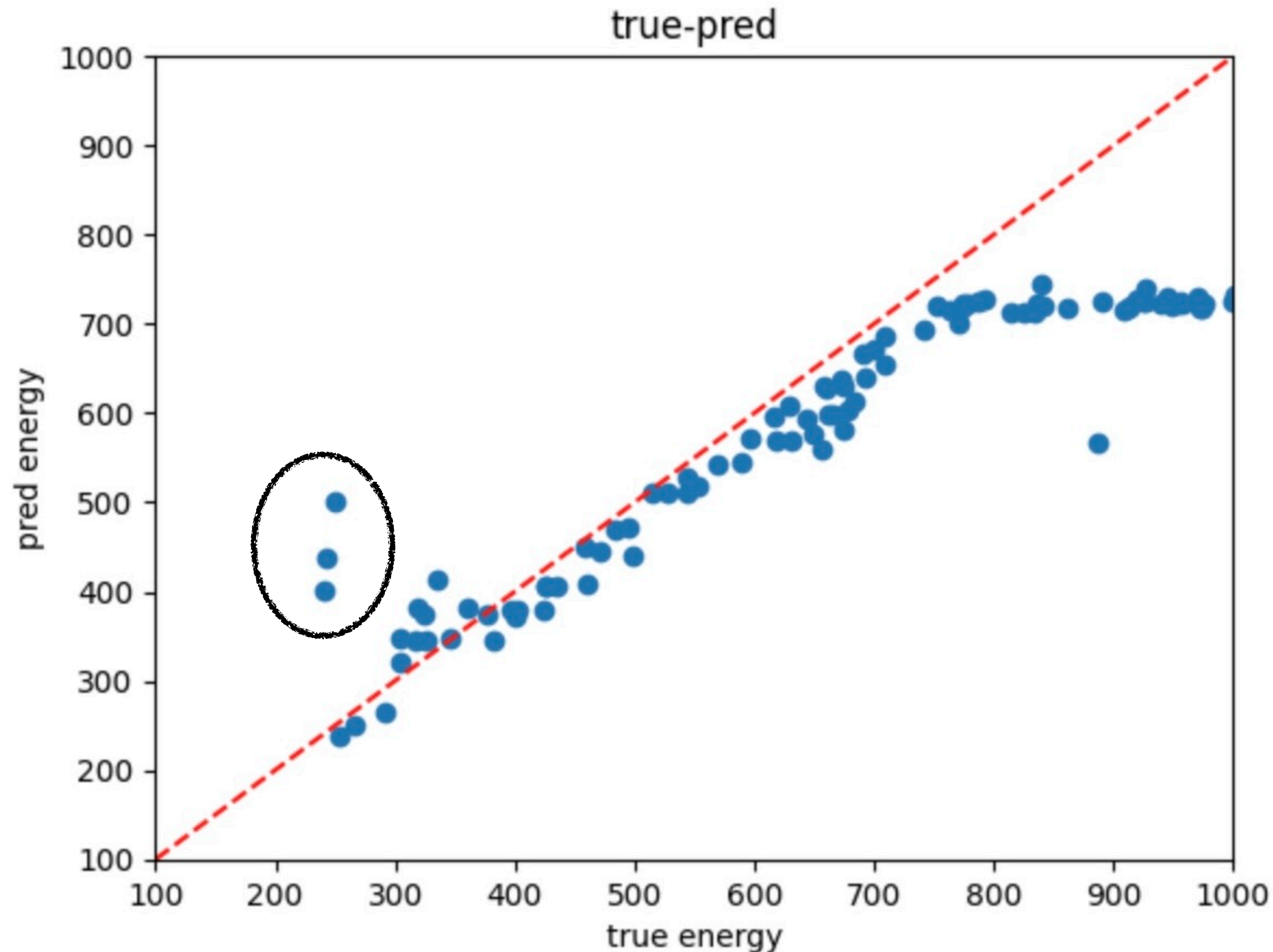
CIDEr-ML Workshop

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Progress in this workshop

- Last week: learn how the Sirens work
- This week:
 - Work on the reconstruction pipeline
 - Using the demo scripts, reconstructed momentum and fixed other parameters (vertex pos, dir, etc)
 - Rescaled the pmt charges by the total charge from all pmts; Fixed a bug of the unit (m->mm)

true energy vs. reconstructed energy

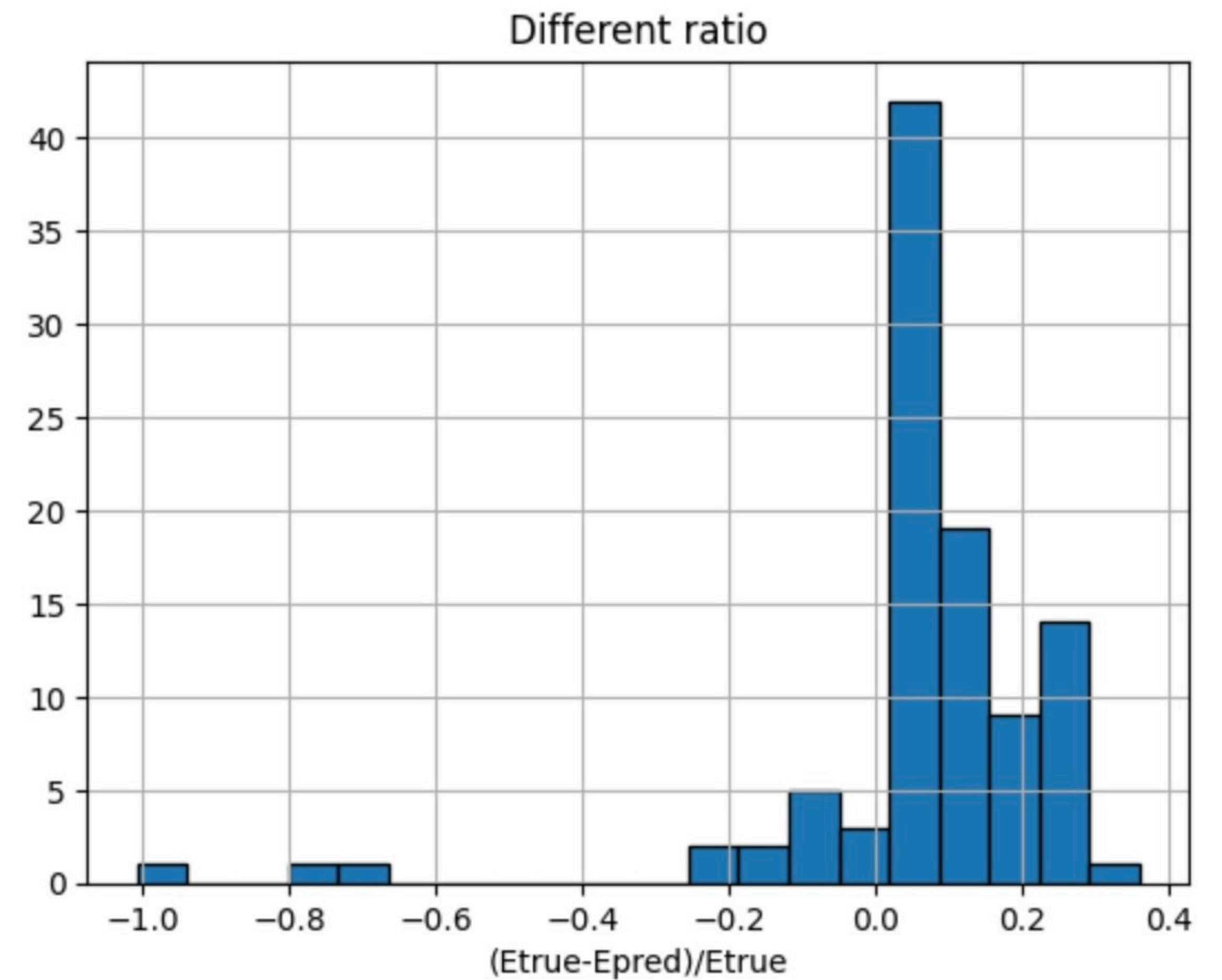
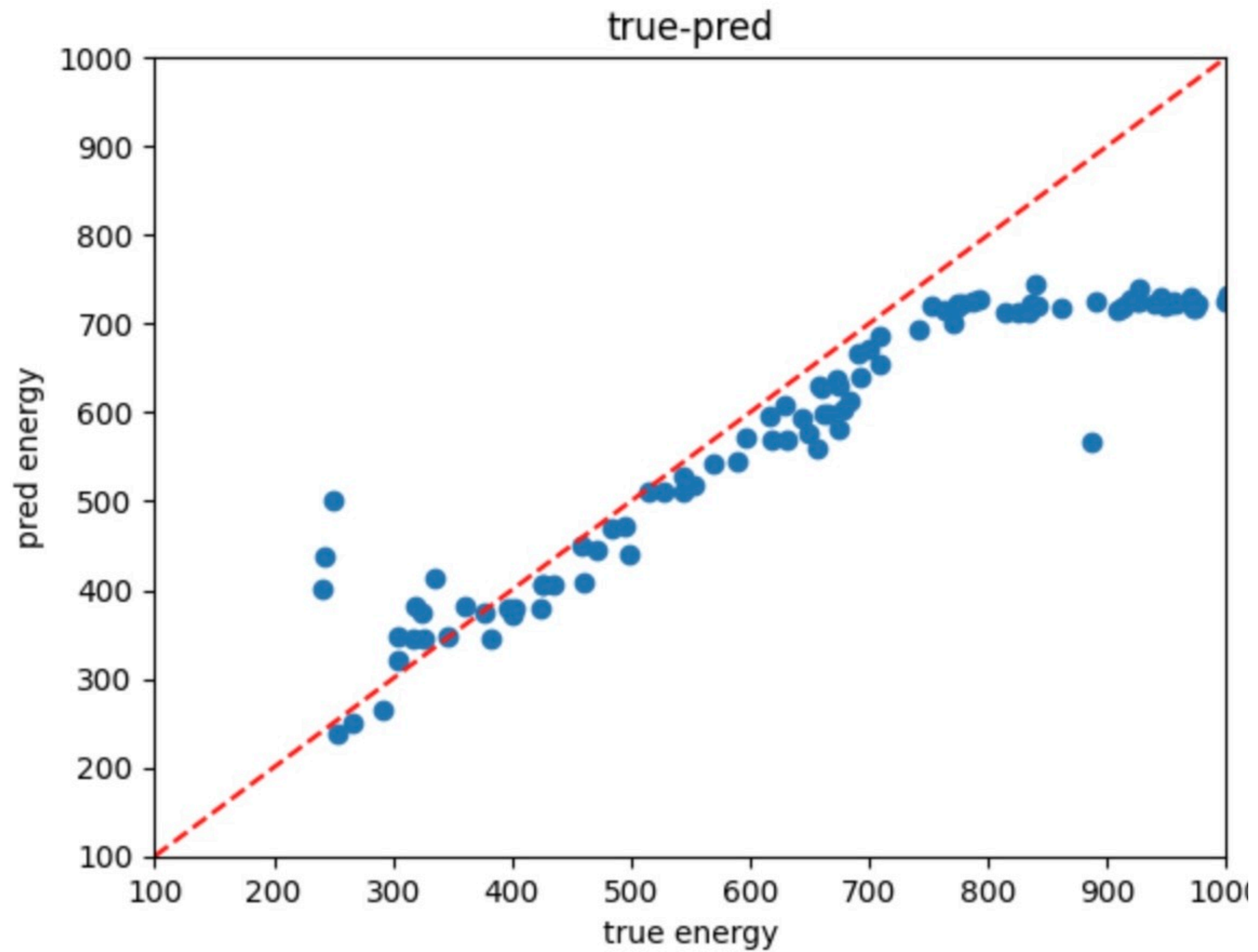


True energy WCSim output, events beam muon simulation momentum in [200, 1000]MeV/c, fixed vertex pos and dir (100 events)

Some differences in the predicted vs true in the low energy is due to local minimization (Ryotaro's report)

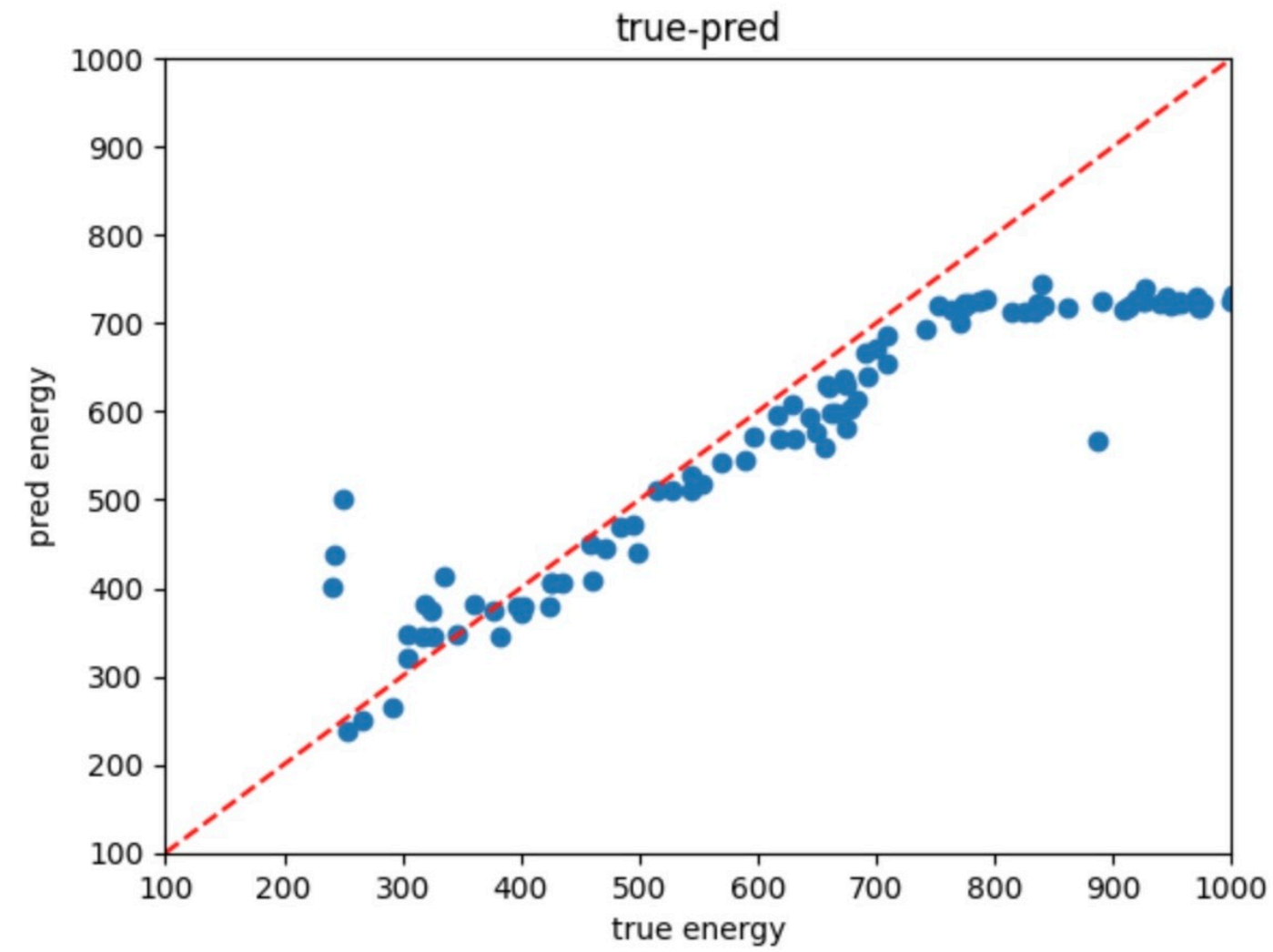
The bias in high energy events is under expectation.

true energy vs. reconstructed energy

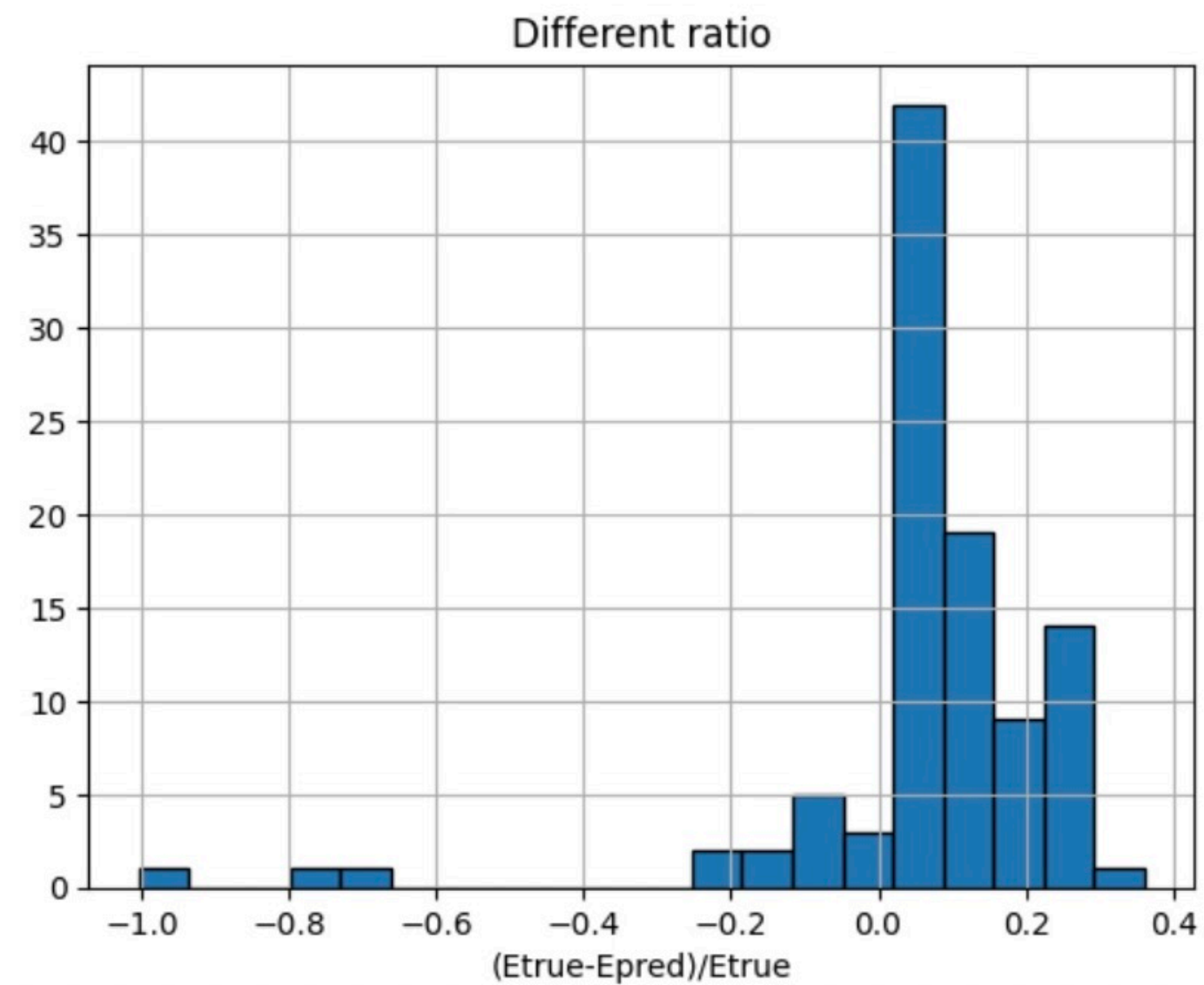
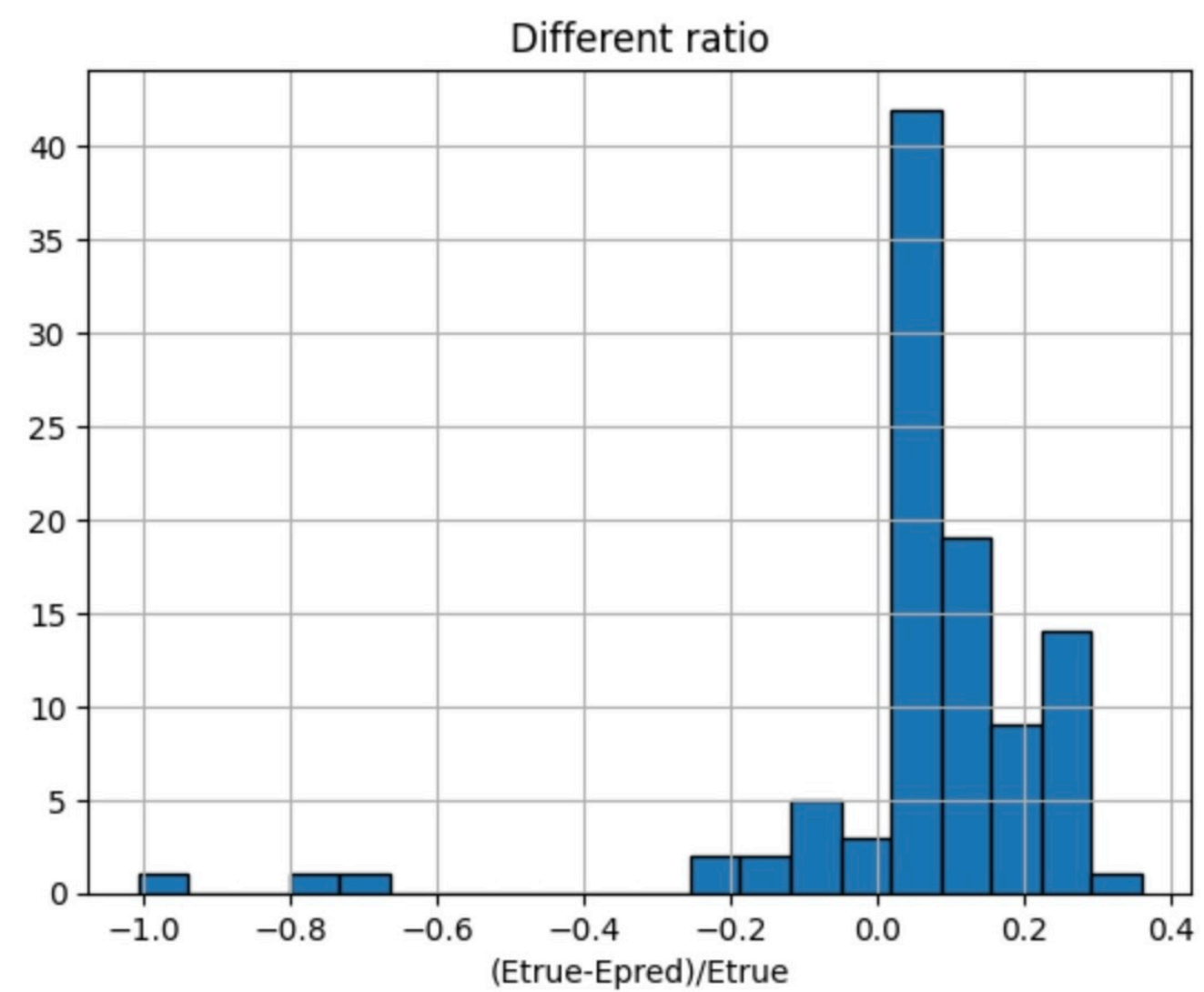
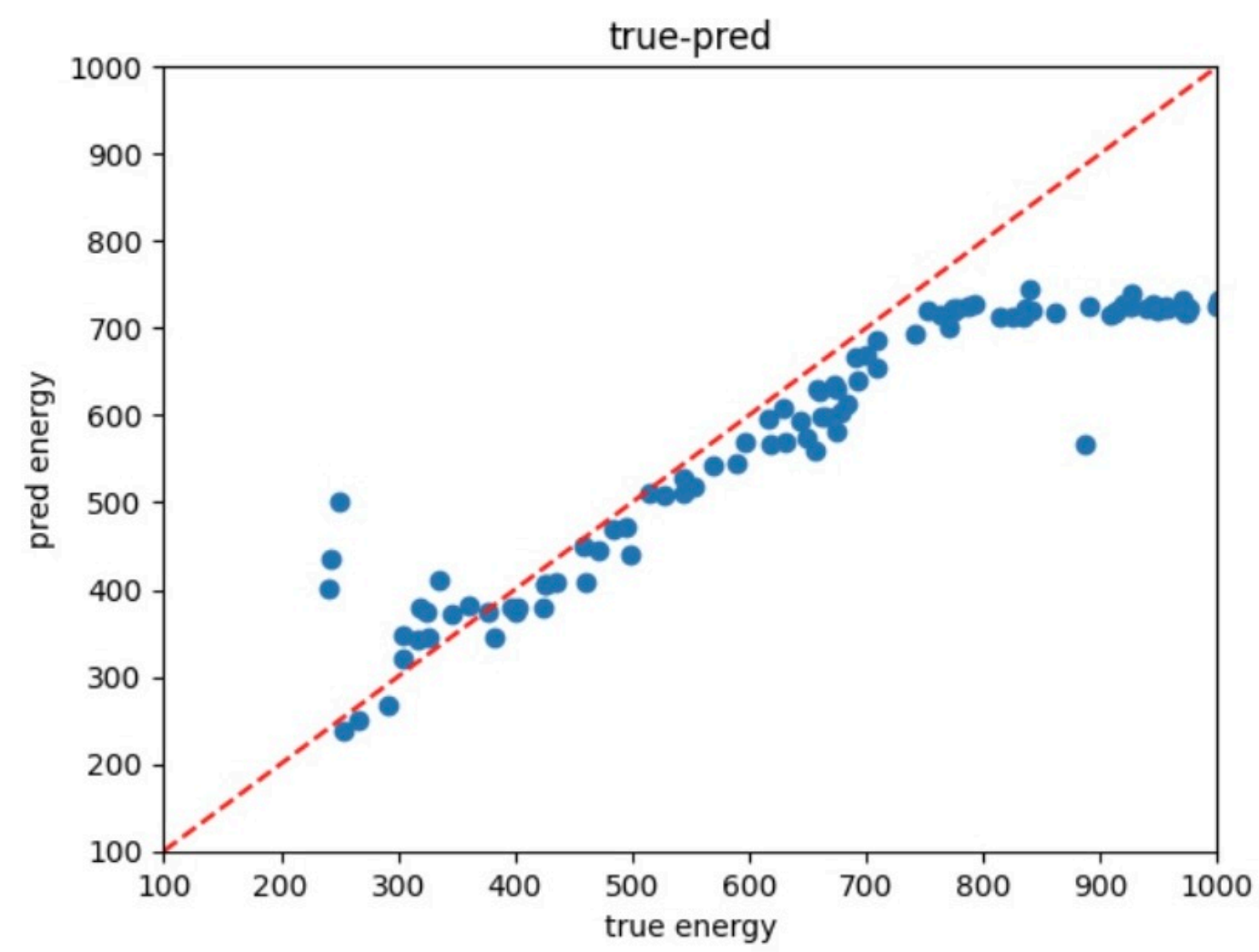


Check the initial energy

Ini energy = 450 MeV



Ini energy = 700 MeV



Summary

- Status: test the reconstruction pipeline work for the single parameter (momentum)
- To-do list:
- Test the pipeline to reconstruct multiple parameters (vertex, directions)
- Now the test pmtQ and true pmtQ are normalized by summing up the total charge when computing the loss. In the future the plan is to make a proper pre-computing normalization for the PMT charges
- Studies on the sampling, loss, gradient etc..