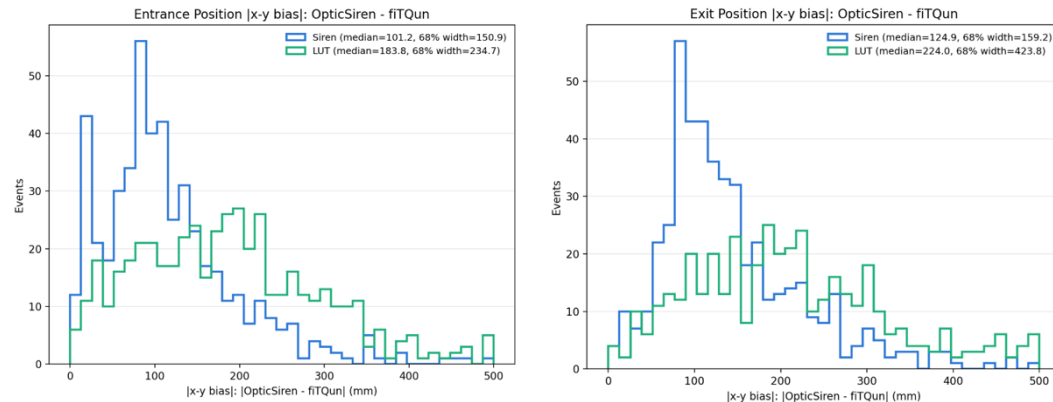


Cosmic calibration with WCTE data

Zhenxiong Xie

Status of the Siren pipeline

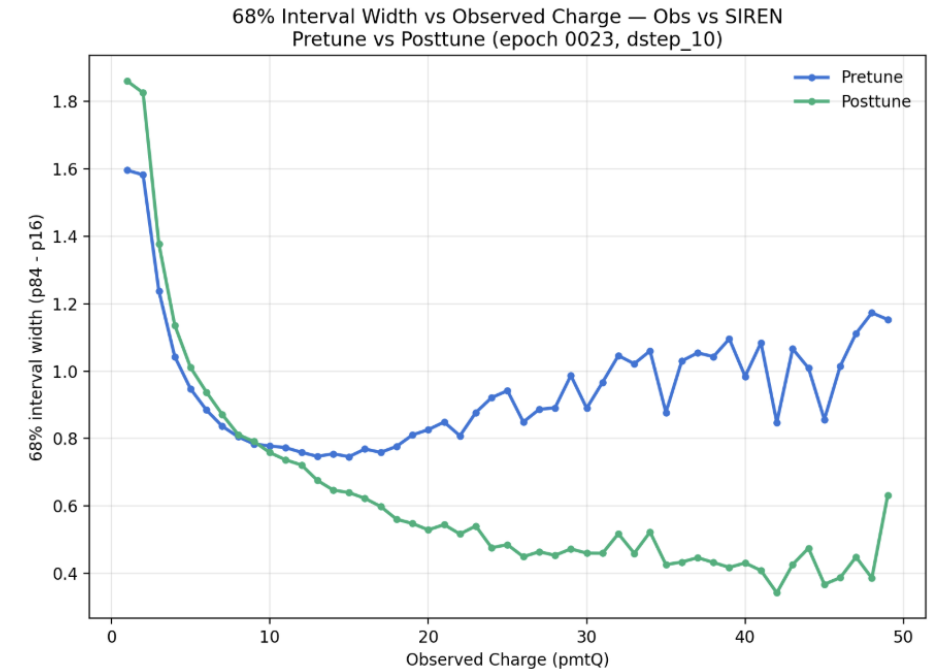
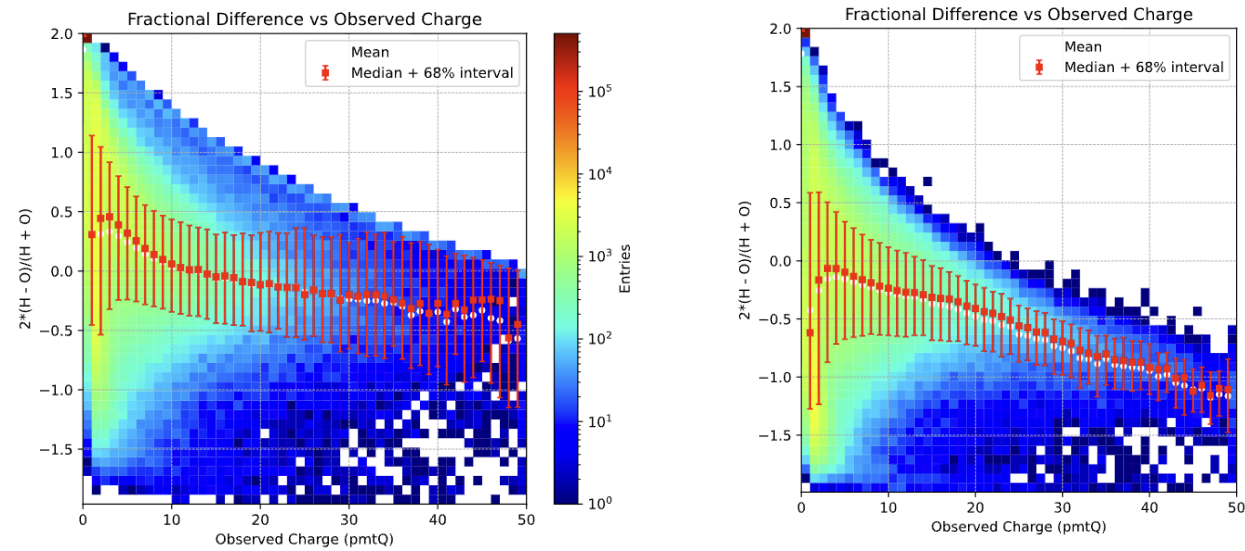
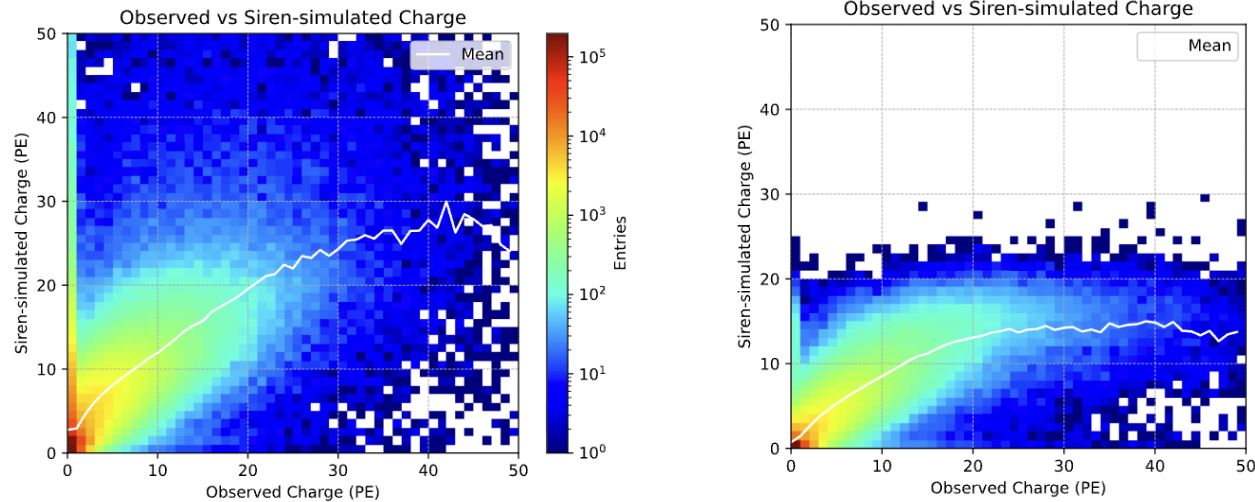
- Since last workshop, several updates have been made to the repository, including enabling data fit, along with supporting code for plotting and validation.
- The pre-tune reconstruction result shows that the lookup table produces a larger difference.



This is consistent with the studies done at the workshop: the lookup table doesn't appear to improve the result. The previous config (using the 1 GeV Cherenkov profile, same sampling) was therefore used for this cosmic calibration with real data.

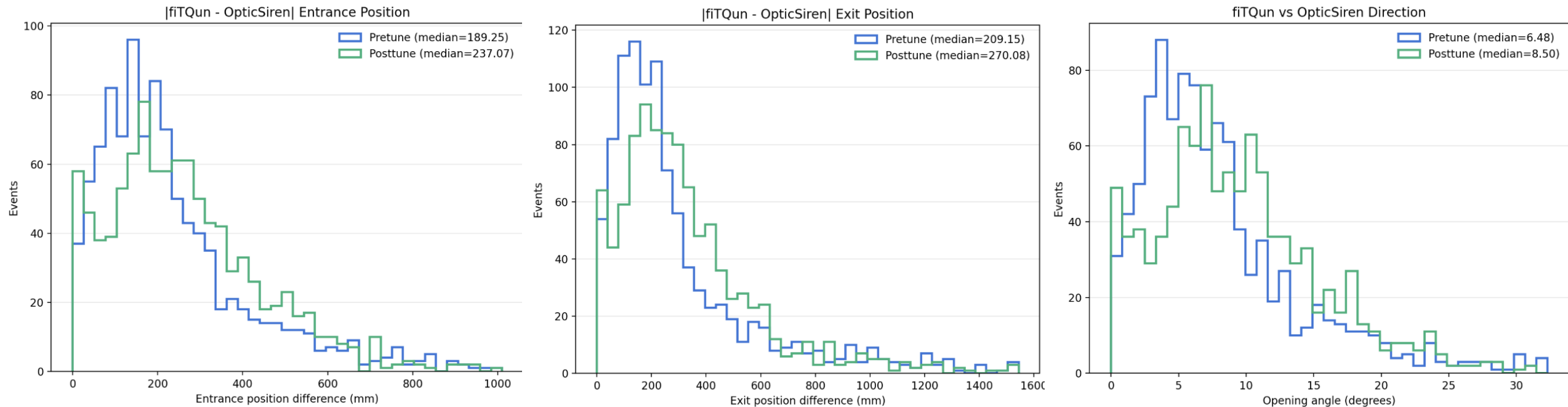
- Run the cosmic calibration pipeline with Siren reconstruction as input, with WCTE cosmic real data

Observed Charge vs Siren simulated Charge (WCTE real data)



The 68% interval is tighter for post-tune at high PEs, but the mean value is heavily biased.
The PMT saturation is set to 30 - could this bias the result?

Reconstruction results (compare with fiTQun)



Post-tune reconstruction shows larger differences from fiTQun than pre-tune

Summary

- All code updates have been pushed to the [feature/cosmic-calibration](#) branch, additionally the [pull request](#) has been opened.
- The cosmic calibration has run with WCTE cosmic real data. The reconstruction with post-tune siren model shows larger bias than the pre-tune (bias means the difference between siren reconstruction with fiTQun reconstruction).
- Next step is processing the beam data and running the reconstruction.