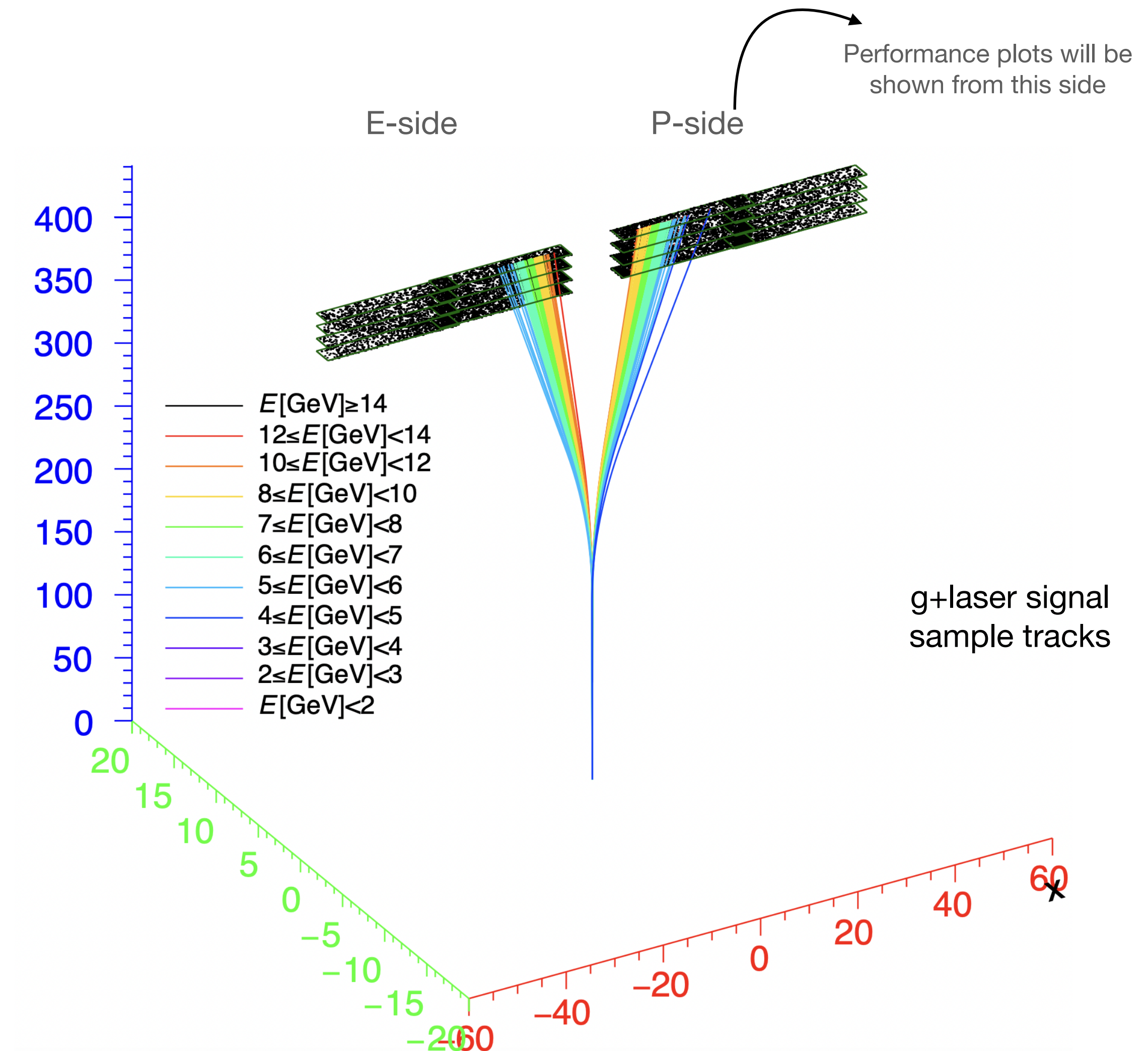


g+laser: Track Reconstruction

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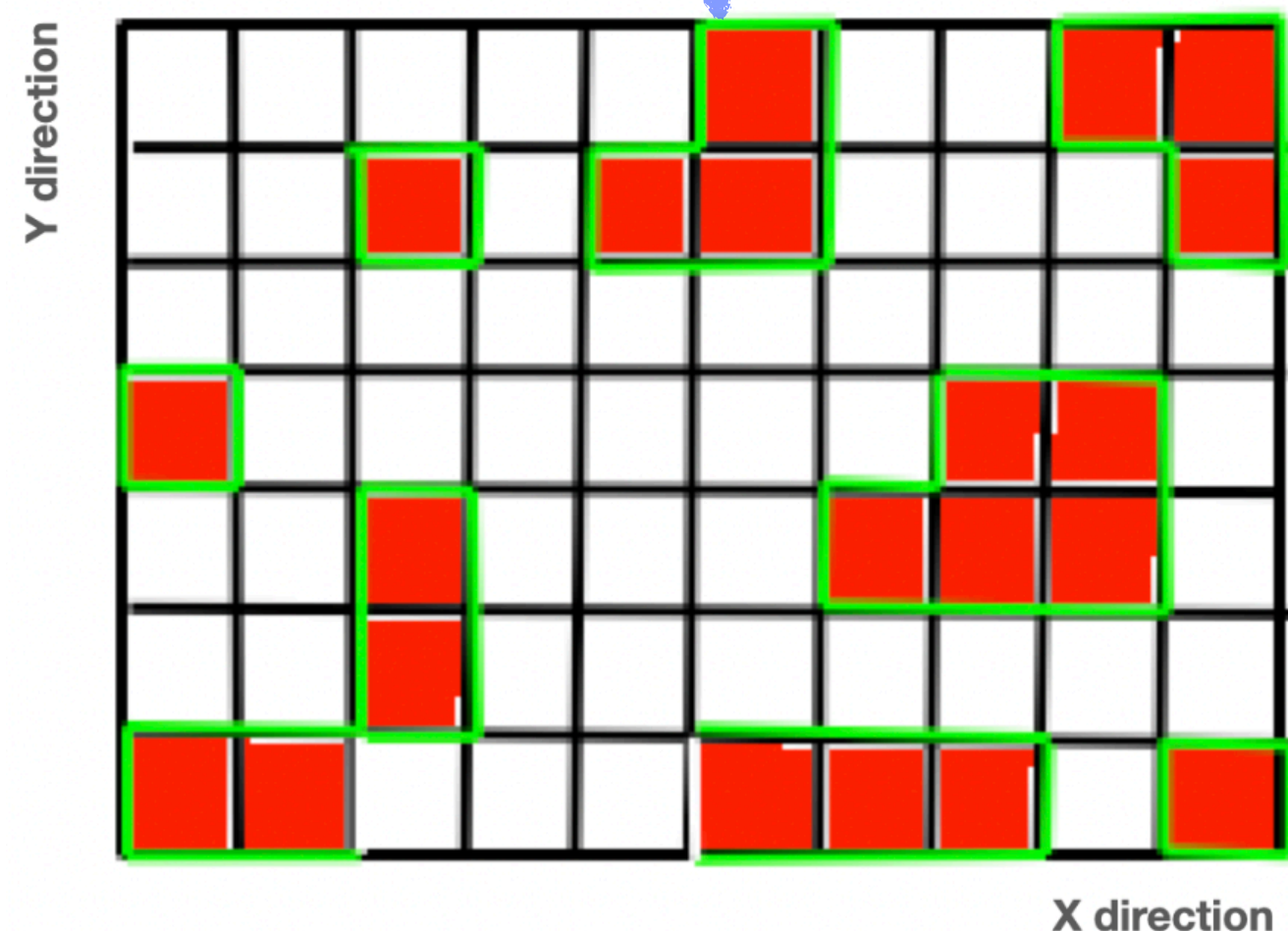
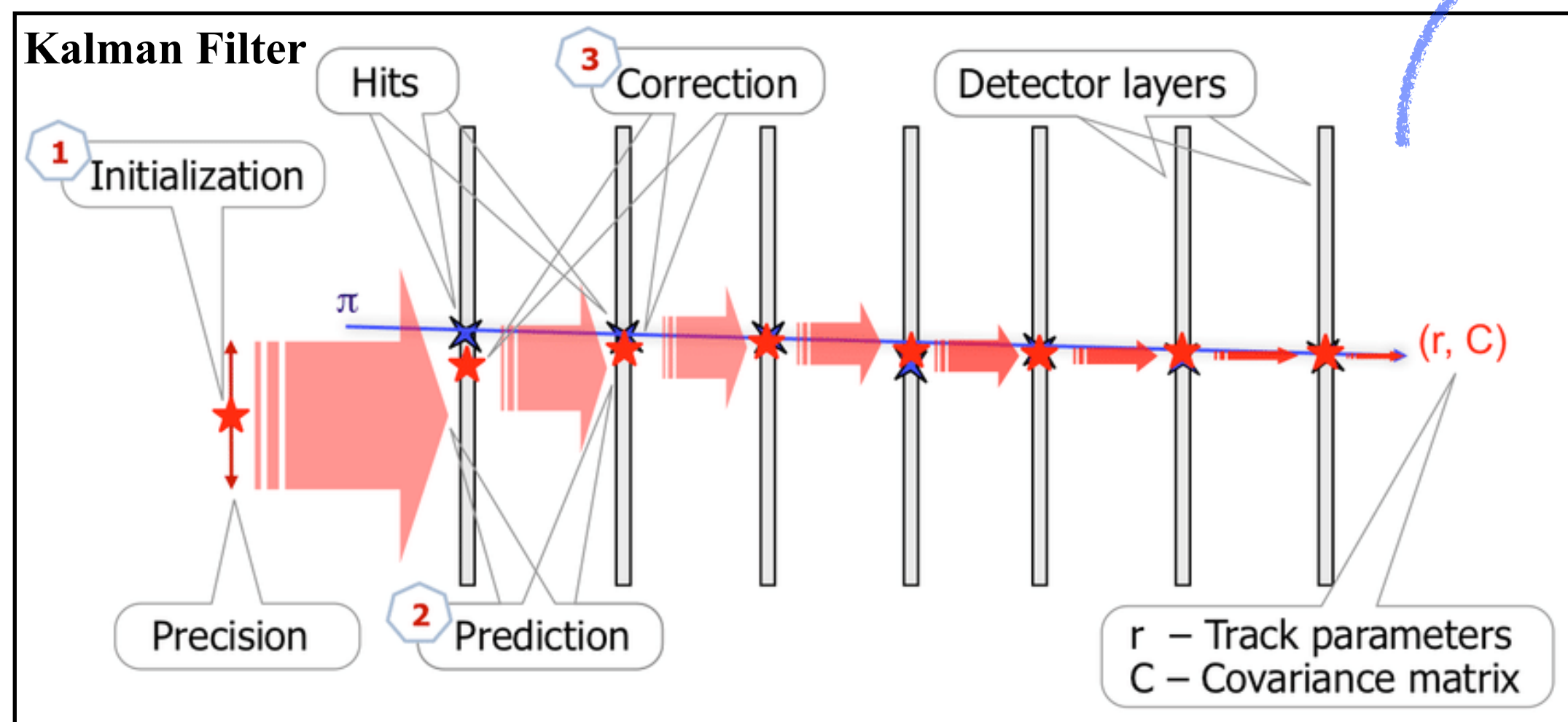
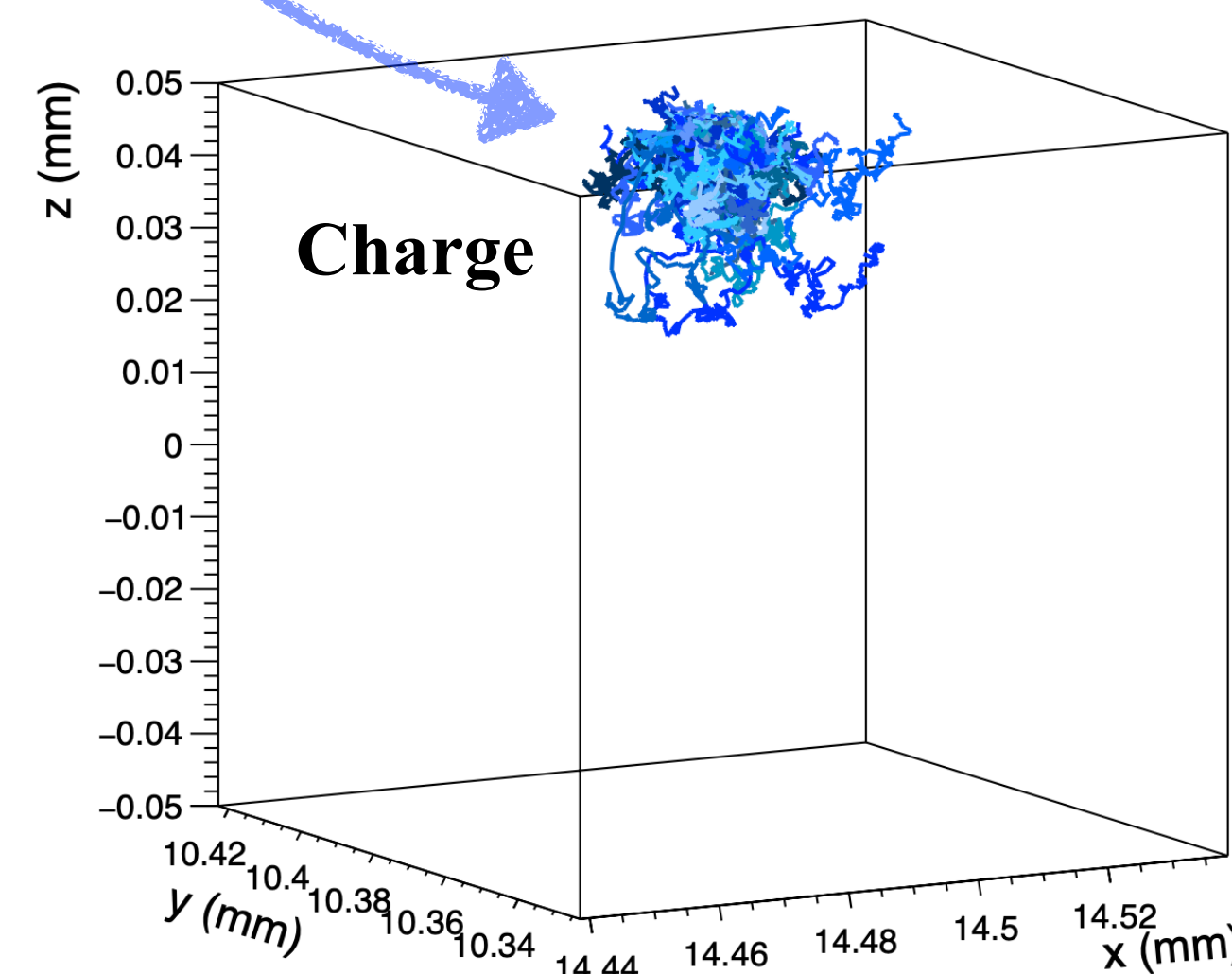
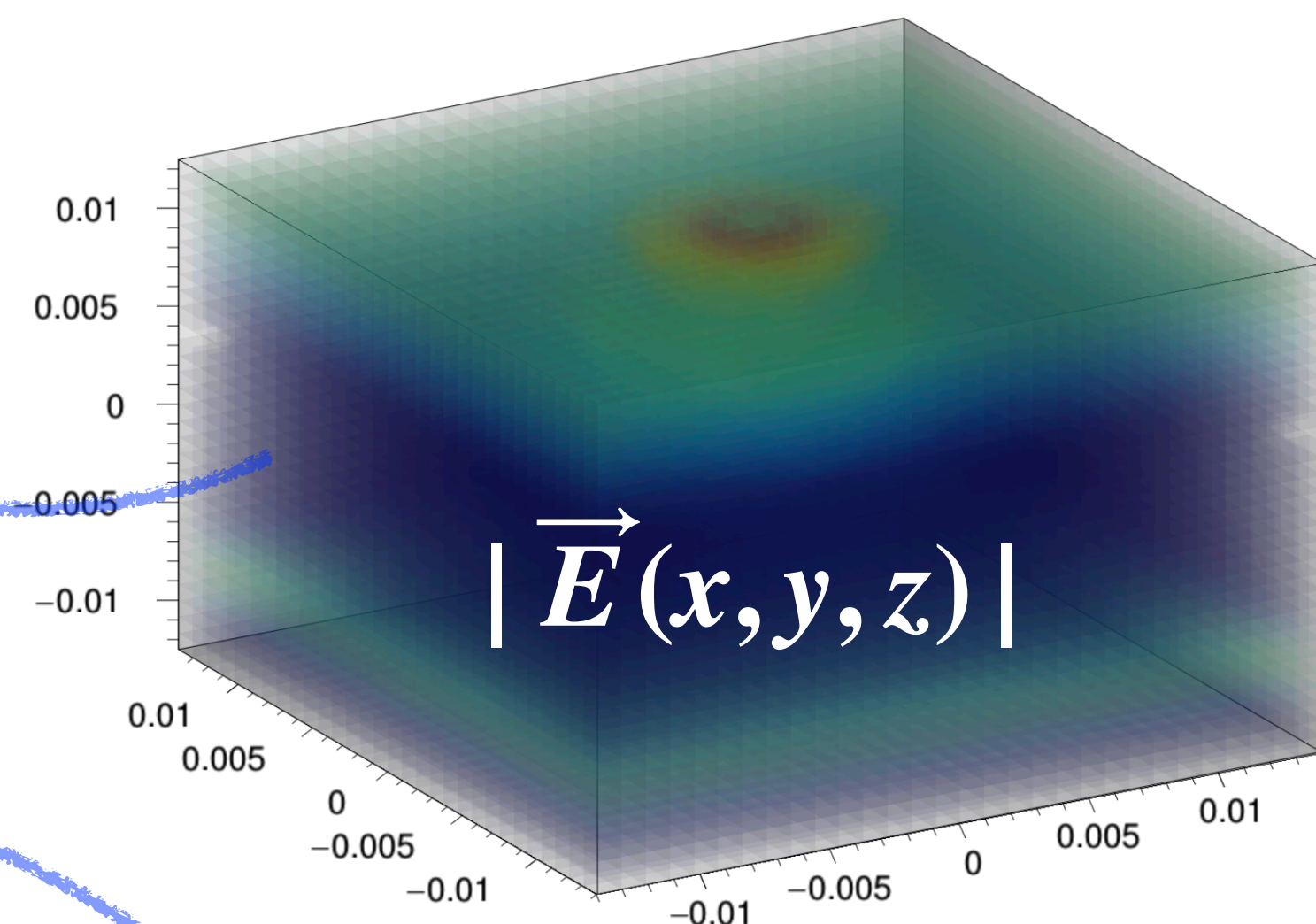
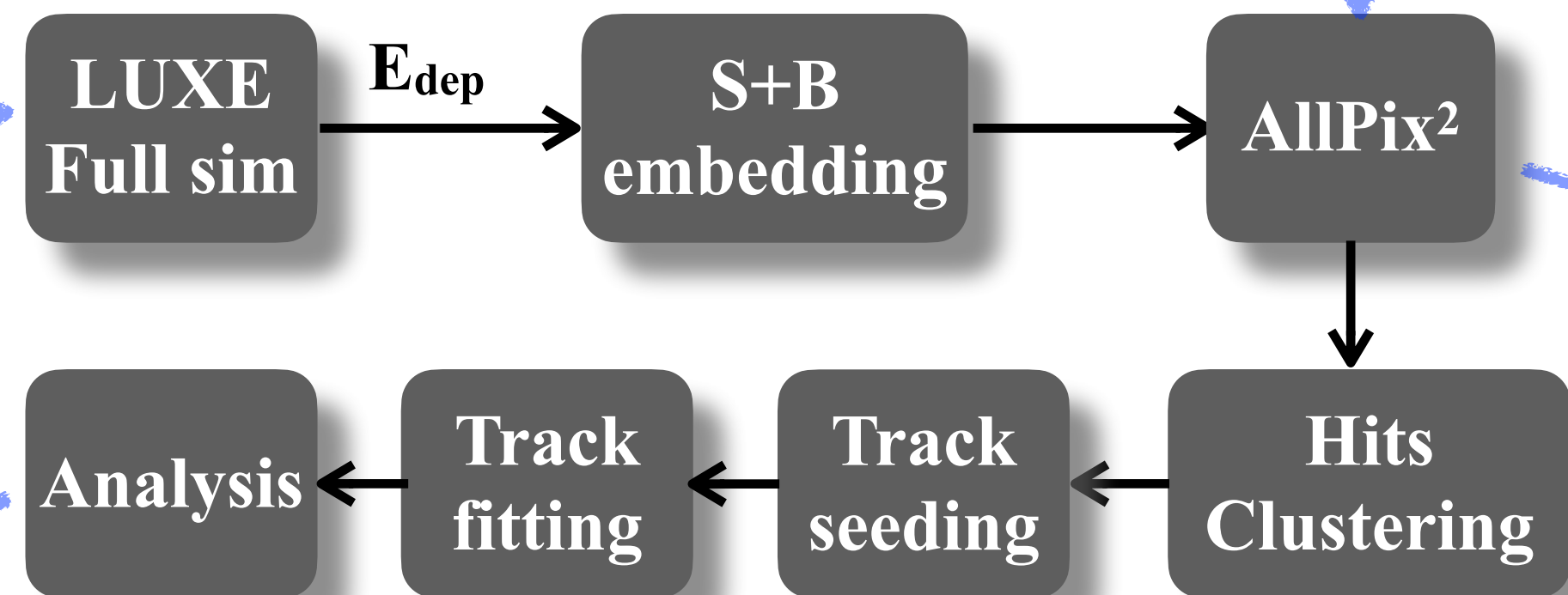
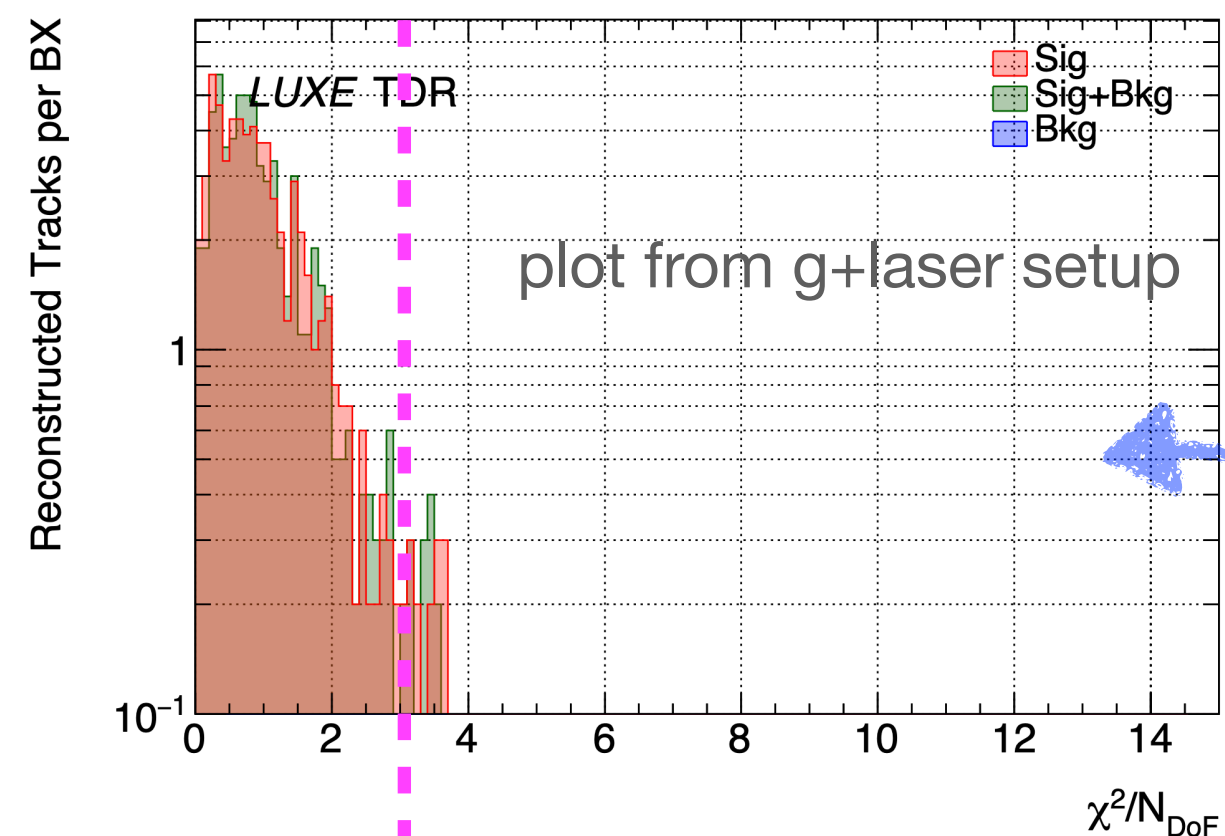
g+laser: Sig, Sig+Bkg and Bkg only sample

- Signal sample:
 - 10BX of signal sample with truth signal multiplicity ~ 70
- We have 1.26 bx of g+laser background only samples.
 - Added 1 BX of Bkg to all 10 BXs of signal to prepare 10BX of Sig+Bkg sample.
- Digitized the hits using Alpex-squared software setup.
 - Output is the location of fired pixels - pixels gathering more than 120e of charge.
 - Fired pixels were clustered using Packman algorithm.
 - Same set of configurations as we used for the e+laser samples for the tracker TDR.

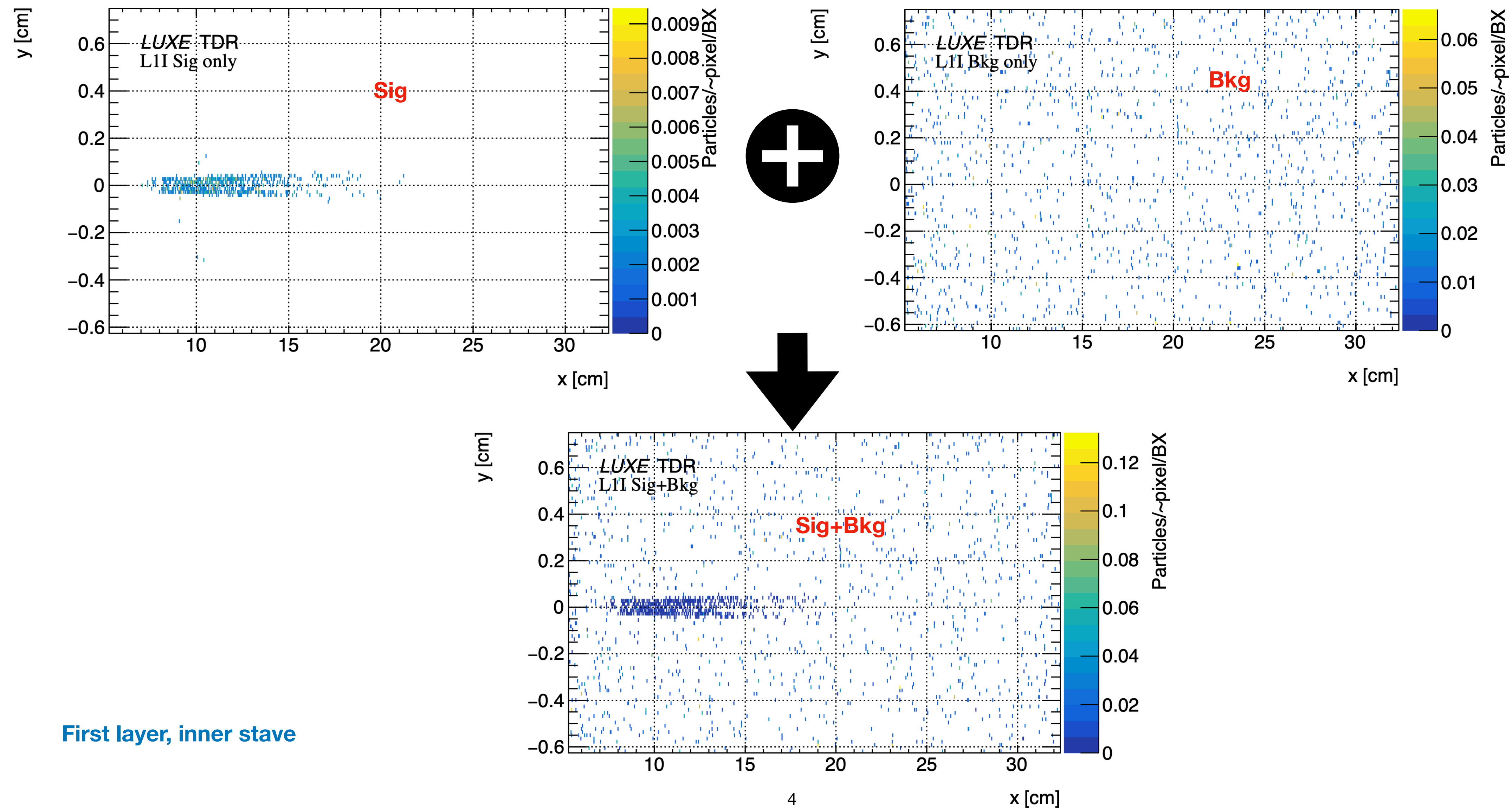




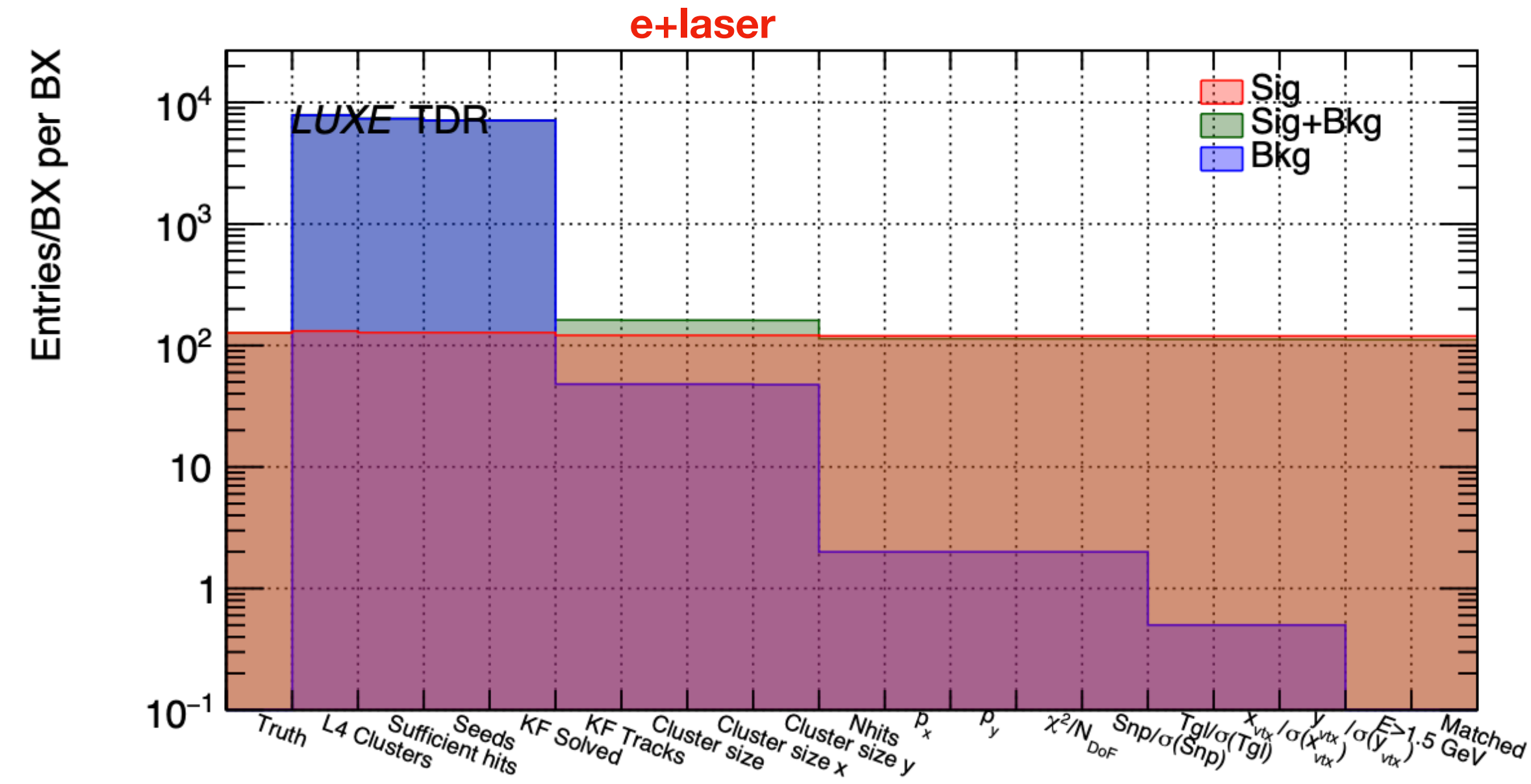
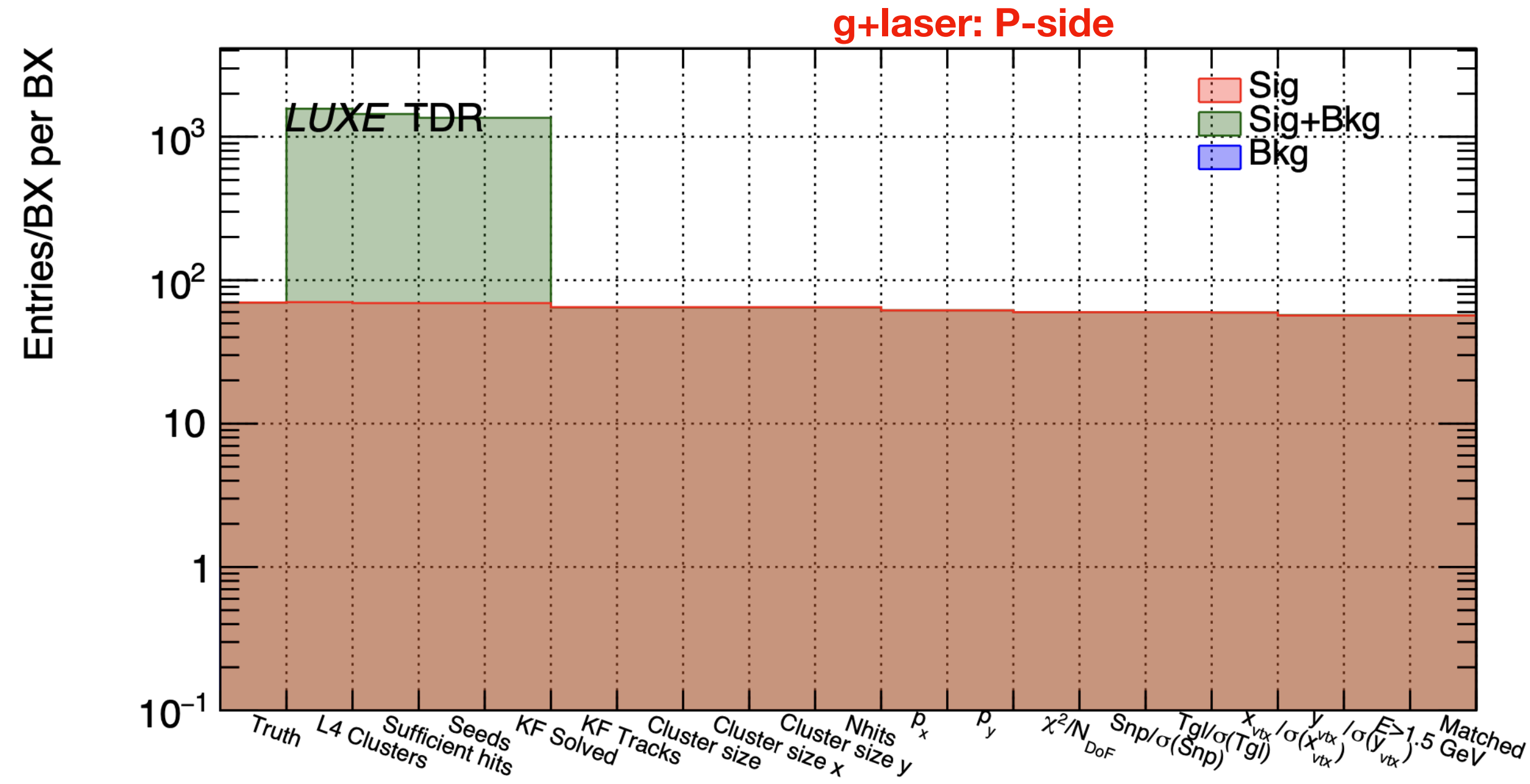
Reconstruction



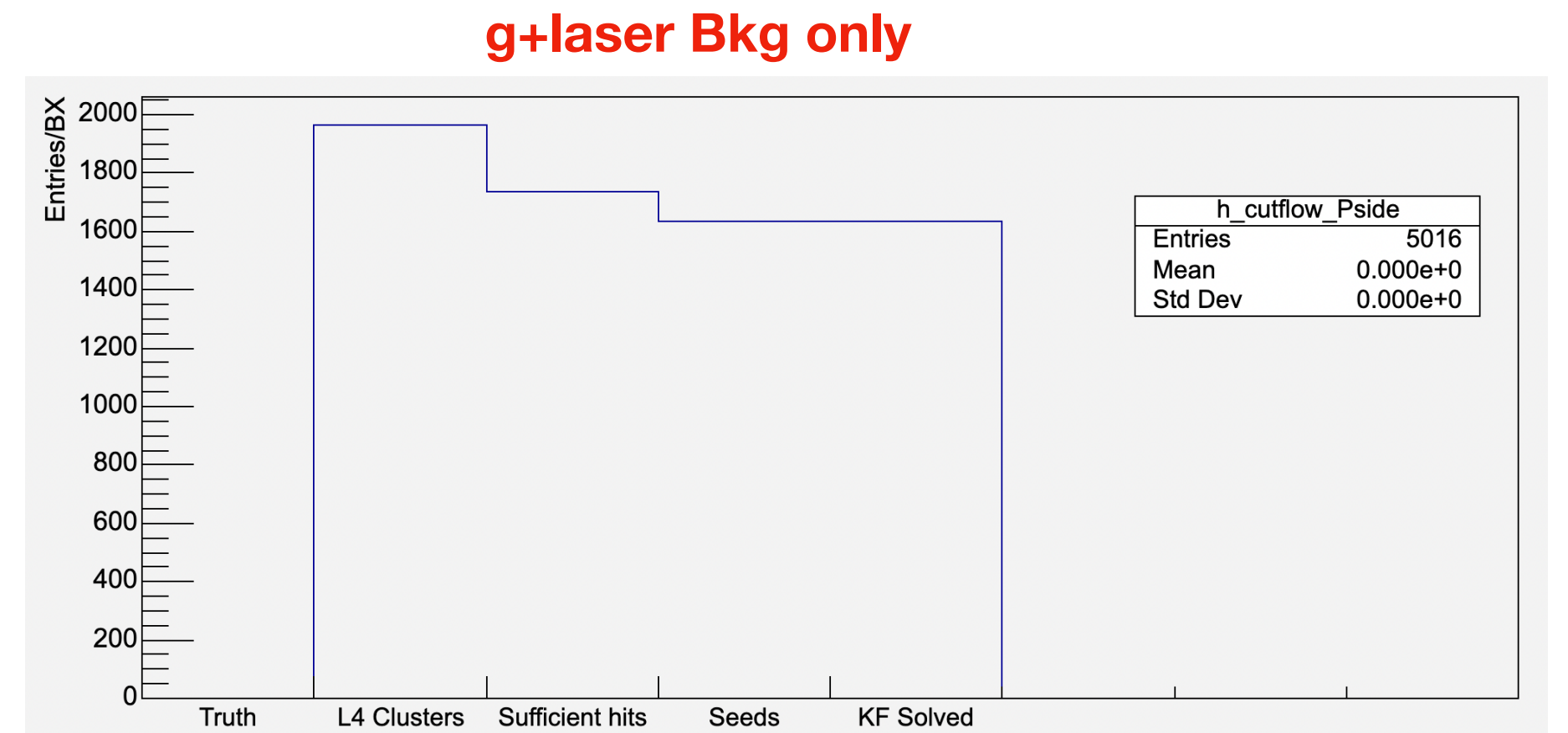
Occupancy plots in g+laser: number of particles per pixel per BX (P-side)



Cutflow

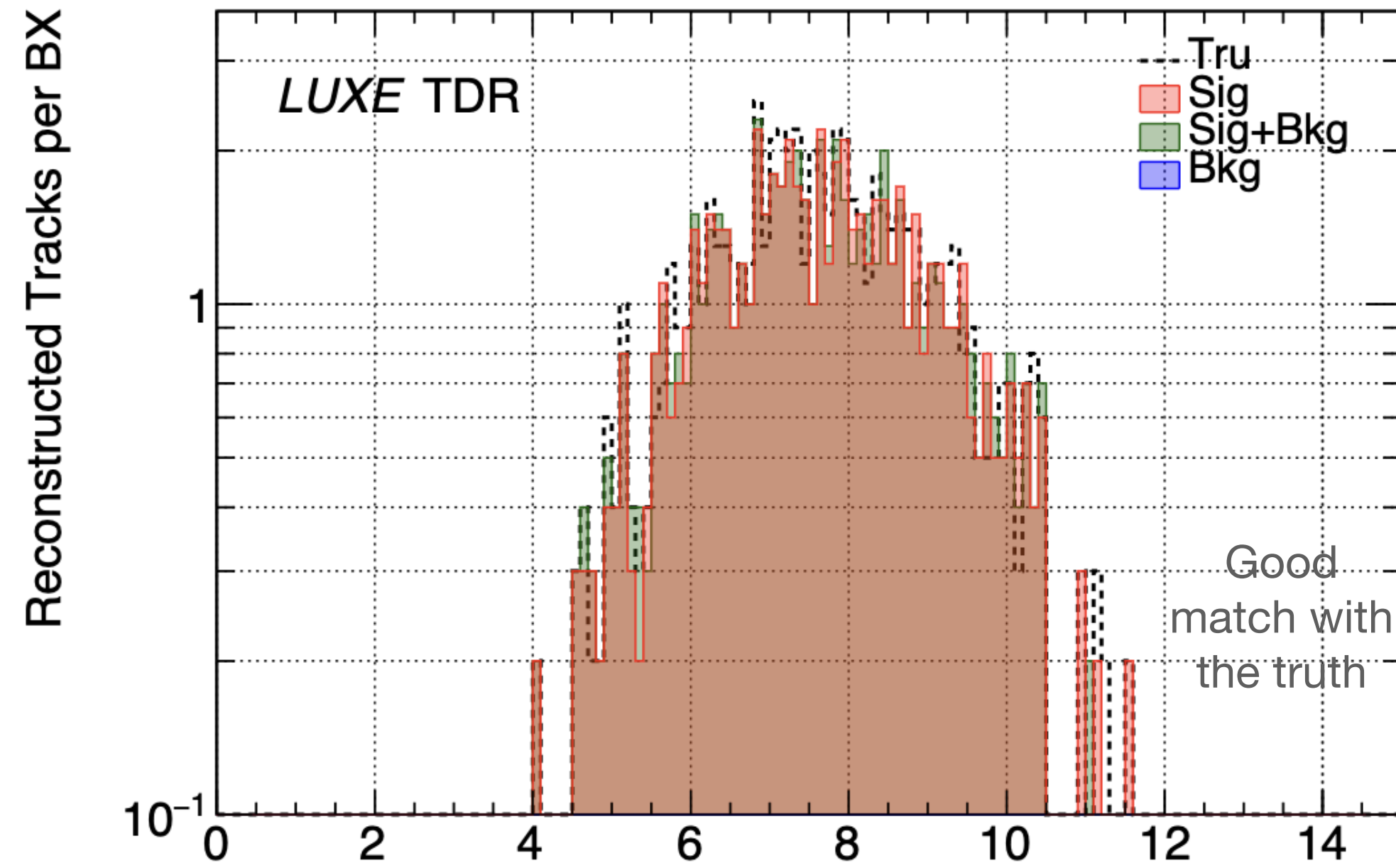


- Cut flow in g+laser signal looks good.
 - Almost no decrease in signal tracks after applying all the quality cuts.
- The g+laser bkg gets killed earlier than the e+laser
 - In e+laser, background tracks survived many quality cuts (up to $y_{vtx}/\sigma(y_{vtx})$).
- For g+laser background samples, 0 track is surviving the quality cuts
 - All tracks are killed at KF Tracks stage
 - Meaning less than 4 hits per track.

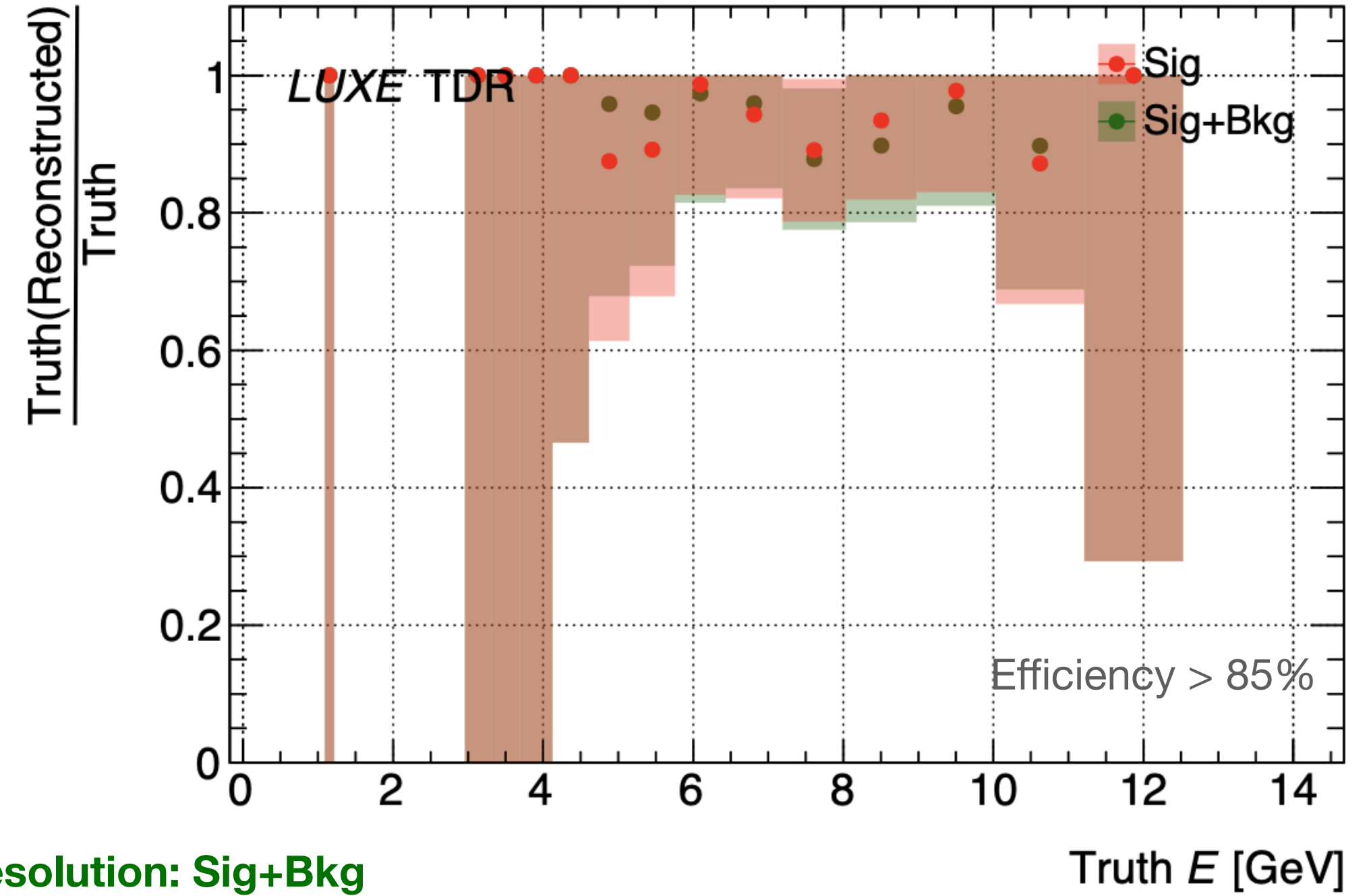


Results: P-side

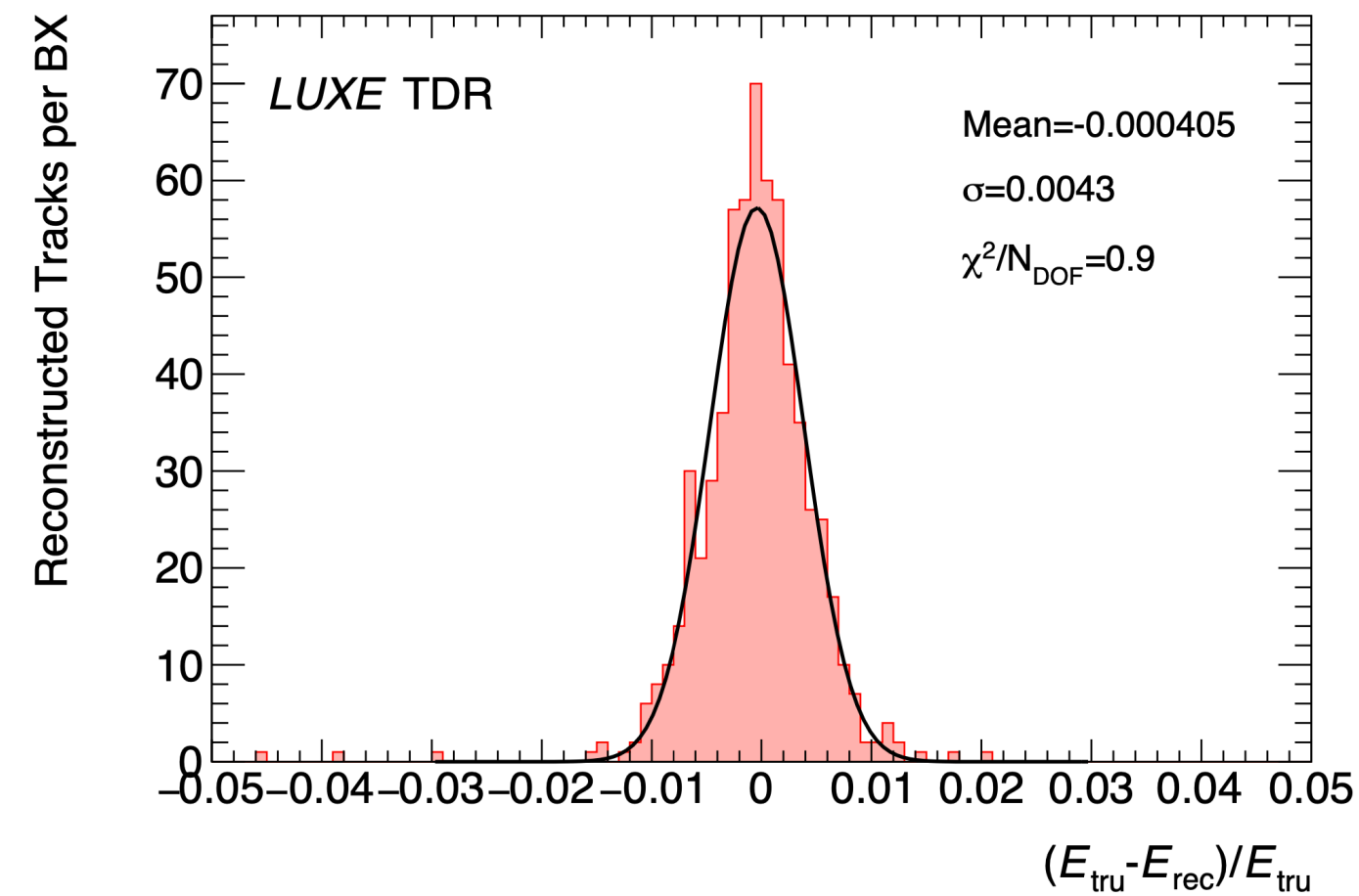
Energy reconstruction



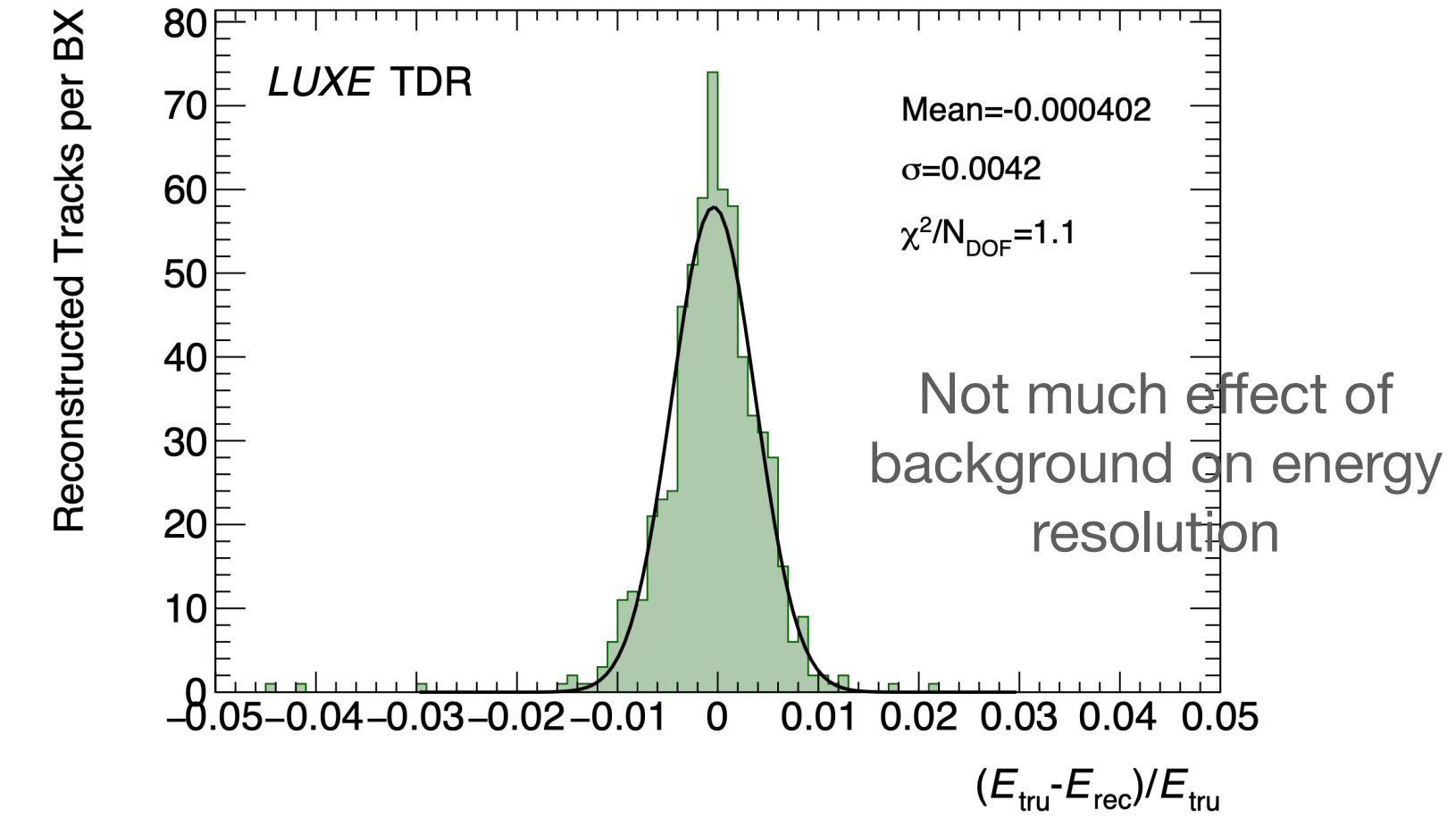
Efficiency



Energy resolution: Sig



Energy resolution: Sig+Bkg



Summary

- Far less bkg compared to the e+laser - this is manifested in the cutflow.
- The quality cuts is not fully optimized
 - The signal tracks lost in the last part of the cutflow can be recovered after proper optimization of the cuts.
- The distributions are very similar between s-only and s+b and truth.
 - This means that the presence of the bkg may alter the track fit by a bit, but it **does not generate** fake tracks.
 - Need more statistics here.
- In the first approximation we **do not need the upstream collimator** as of now (despite the concerns from the large g-beam).
- Performance of the E-side is similar.

Back up

Clusters

