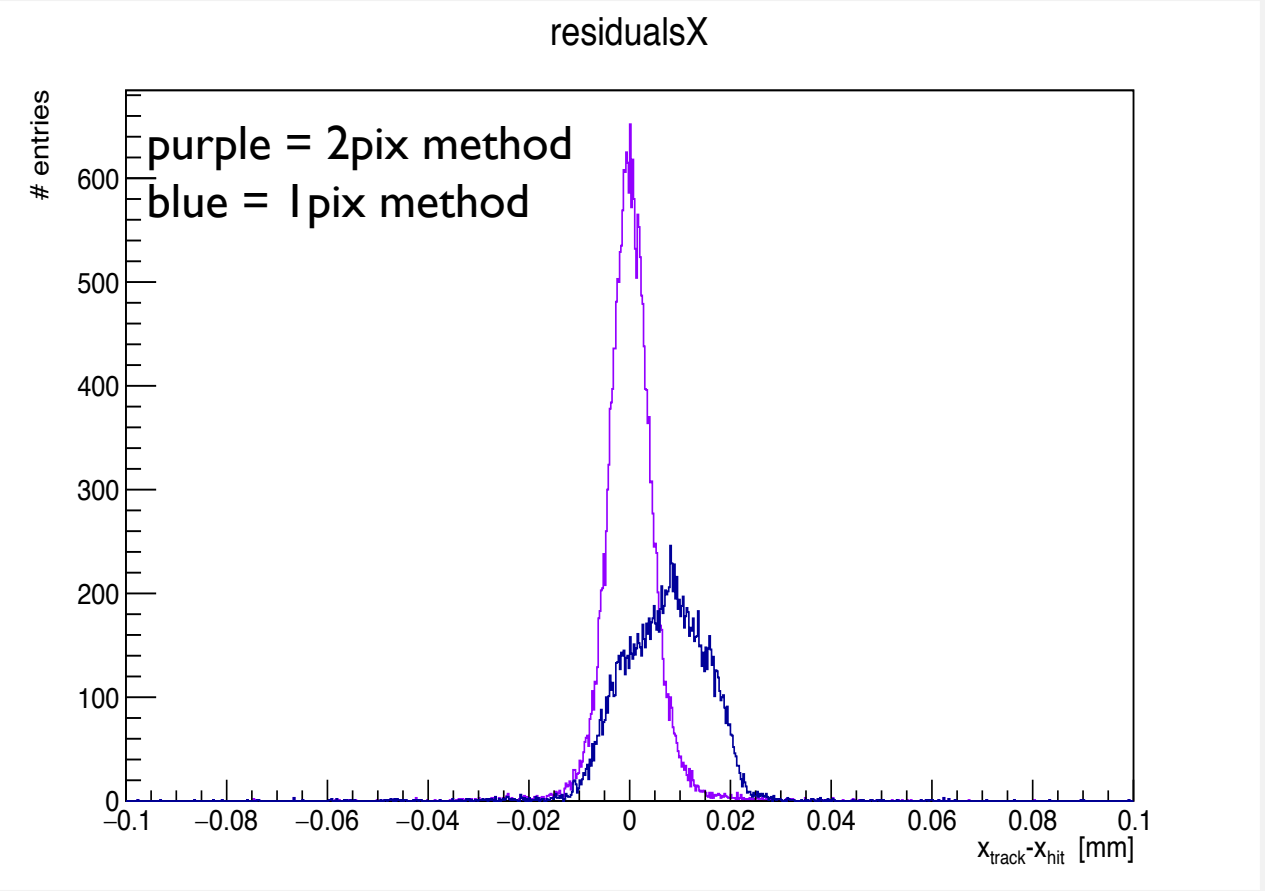
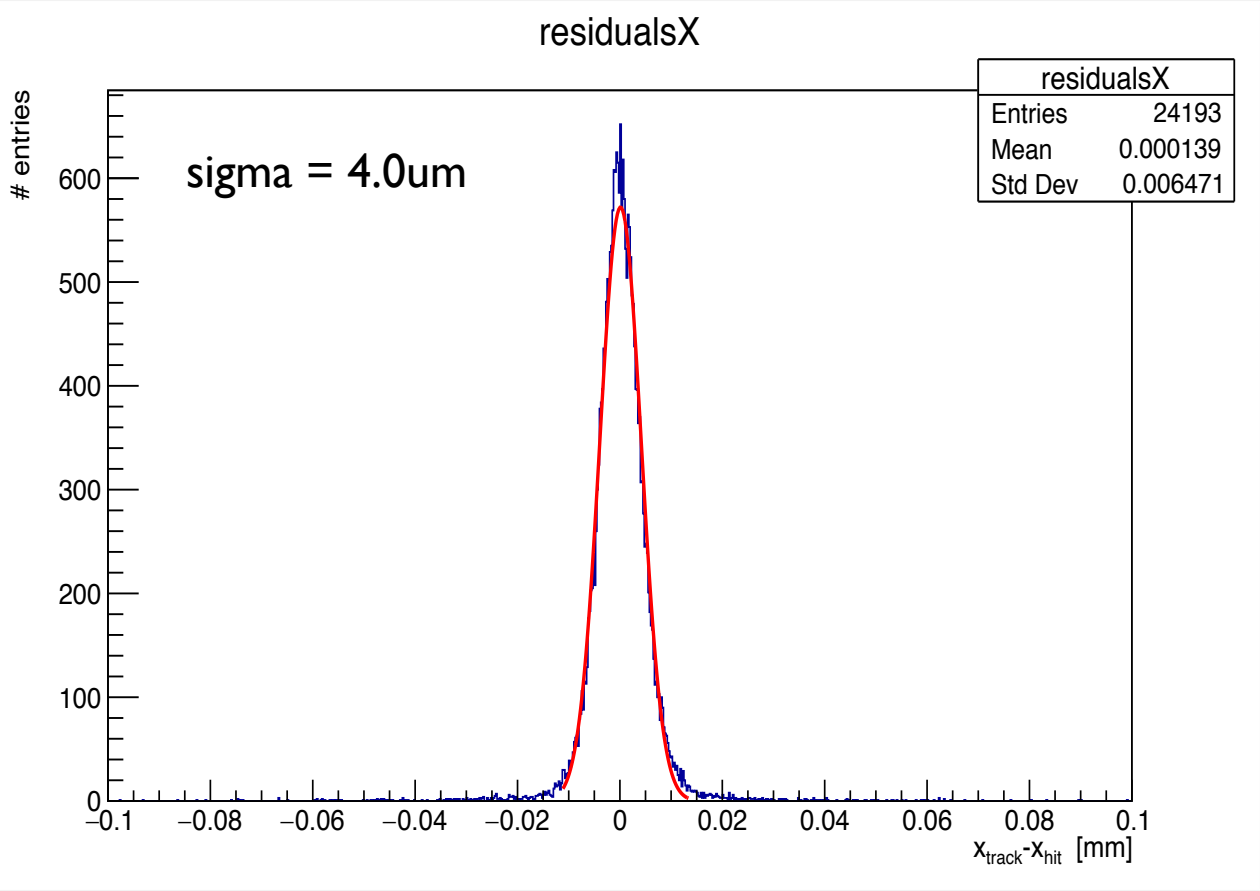
CUT SCANS FOR DESY TB RECO

1/7/2020

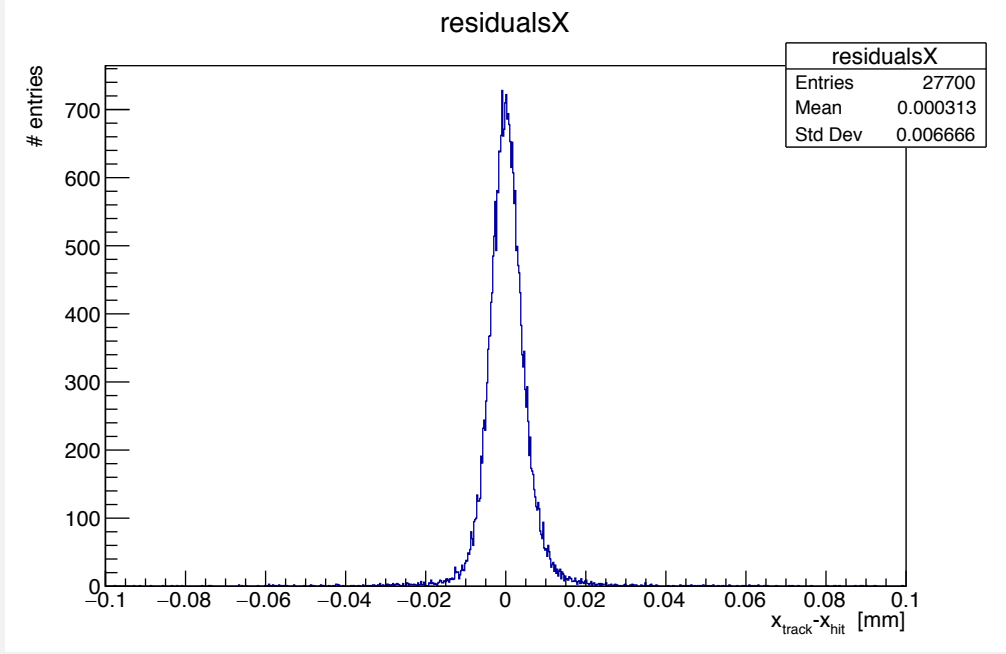
IMPLEMENTED 2-PIXEL UNIT CELL

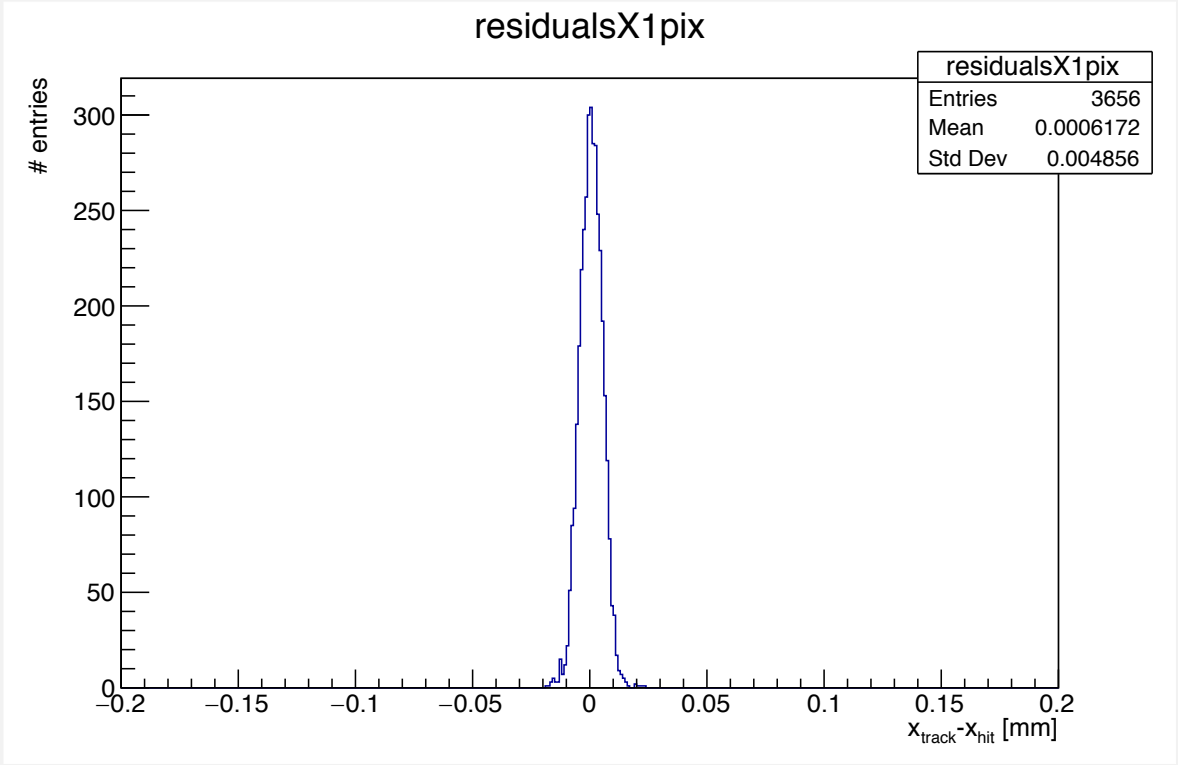


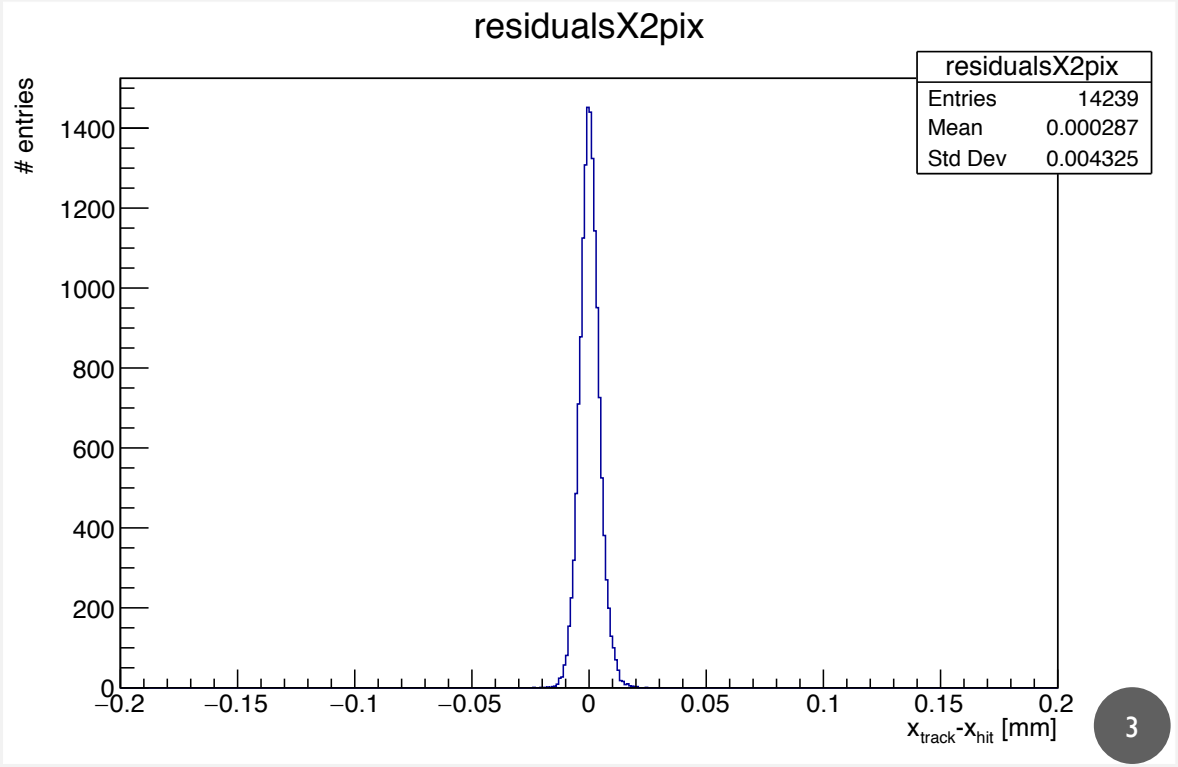


RESIDUAL FOR DIFFERENT CLUSTER SIZES

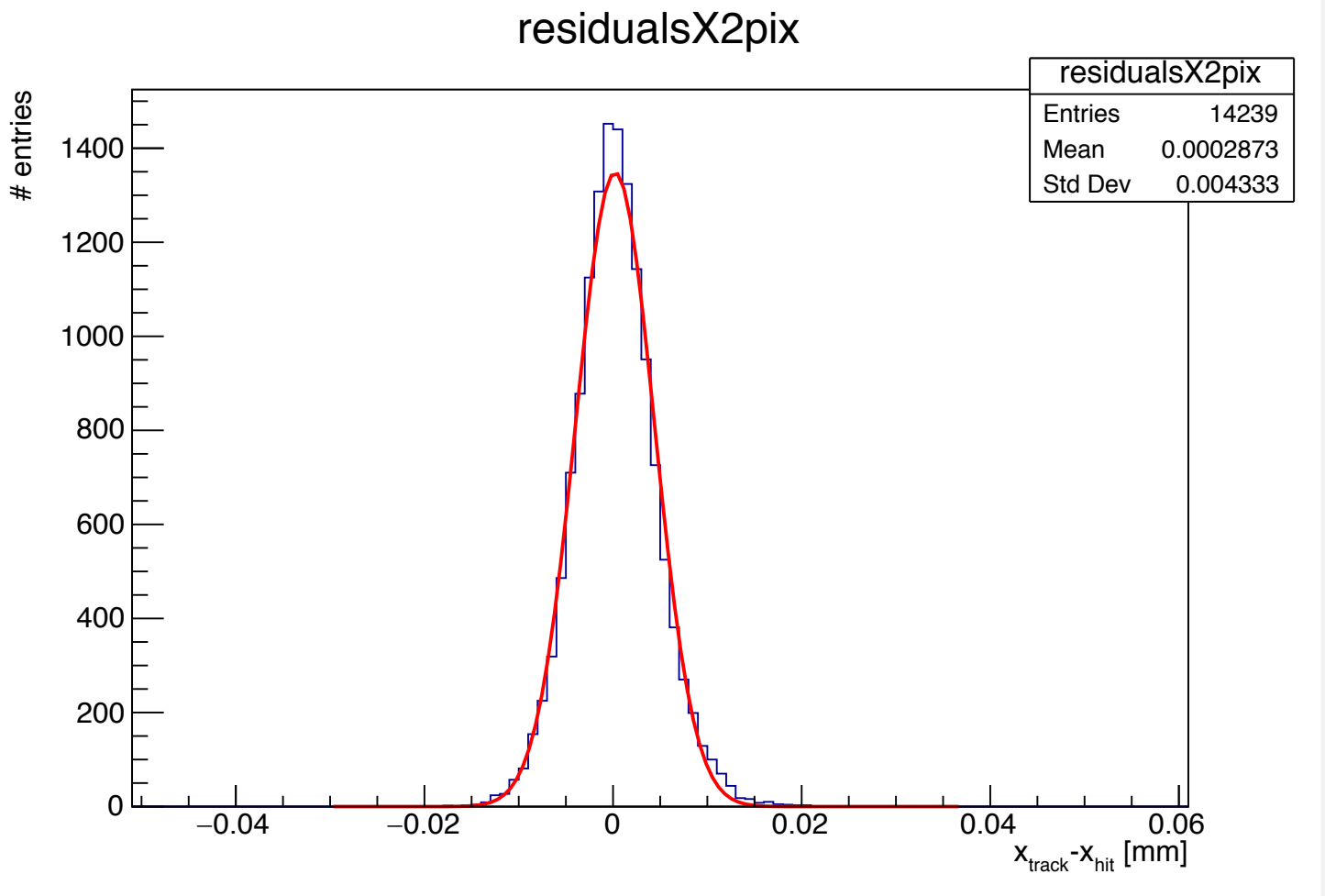
	All clusters	1 pix clusters	2 pix clusters
Gauss mean	0.15um	0.66um	0.19um
Gauss sigma	3.94um	4.68um	4.12um







SLIGHT ASYMMETRY OF 2 PIX CLUSTERS



SPATIAL TRACKING CUT

Want to determine the spatial cut that should be used during track formation.

Timepix3 plane has the widest residual, with a gauss sigma of ~20um.
Mimosa planes have residuals ~2.5um.
Alignment error in X and Y is ~1um and 1° per plane.
Z alignment error is ~0.2mm.

→ thought a value of 40um was reasonable.

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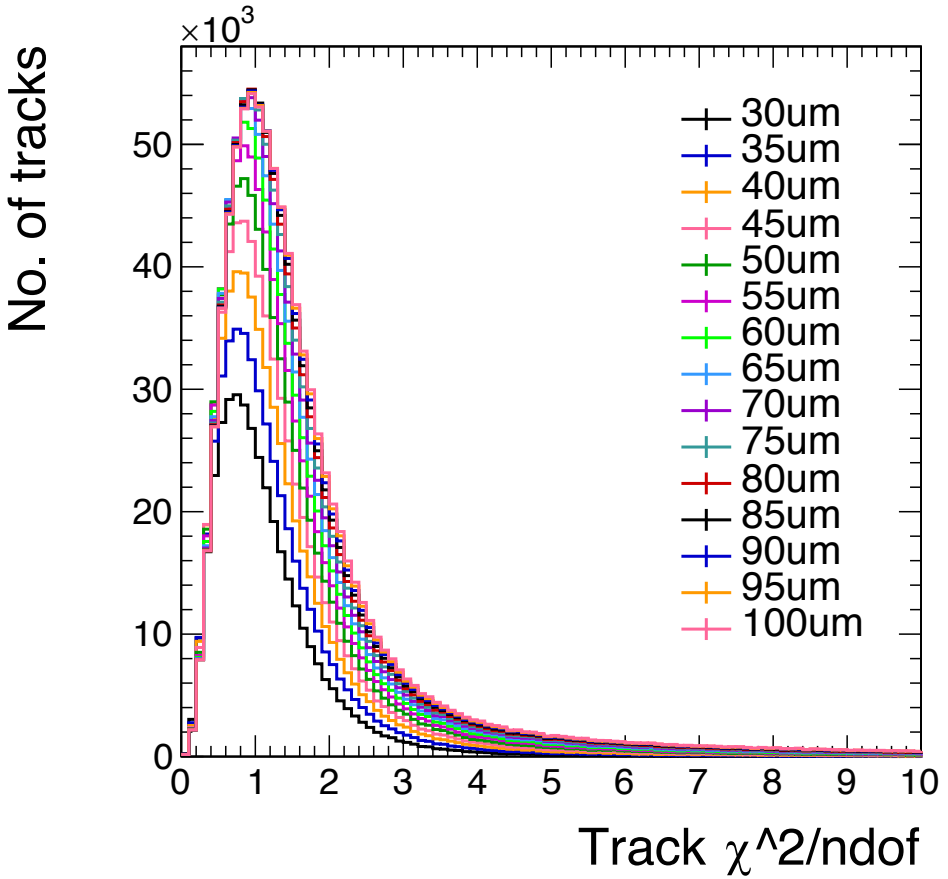

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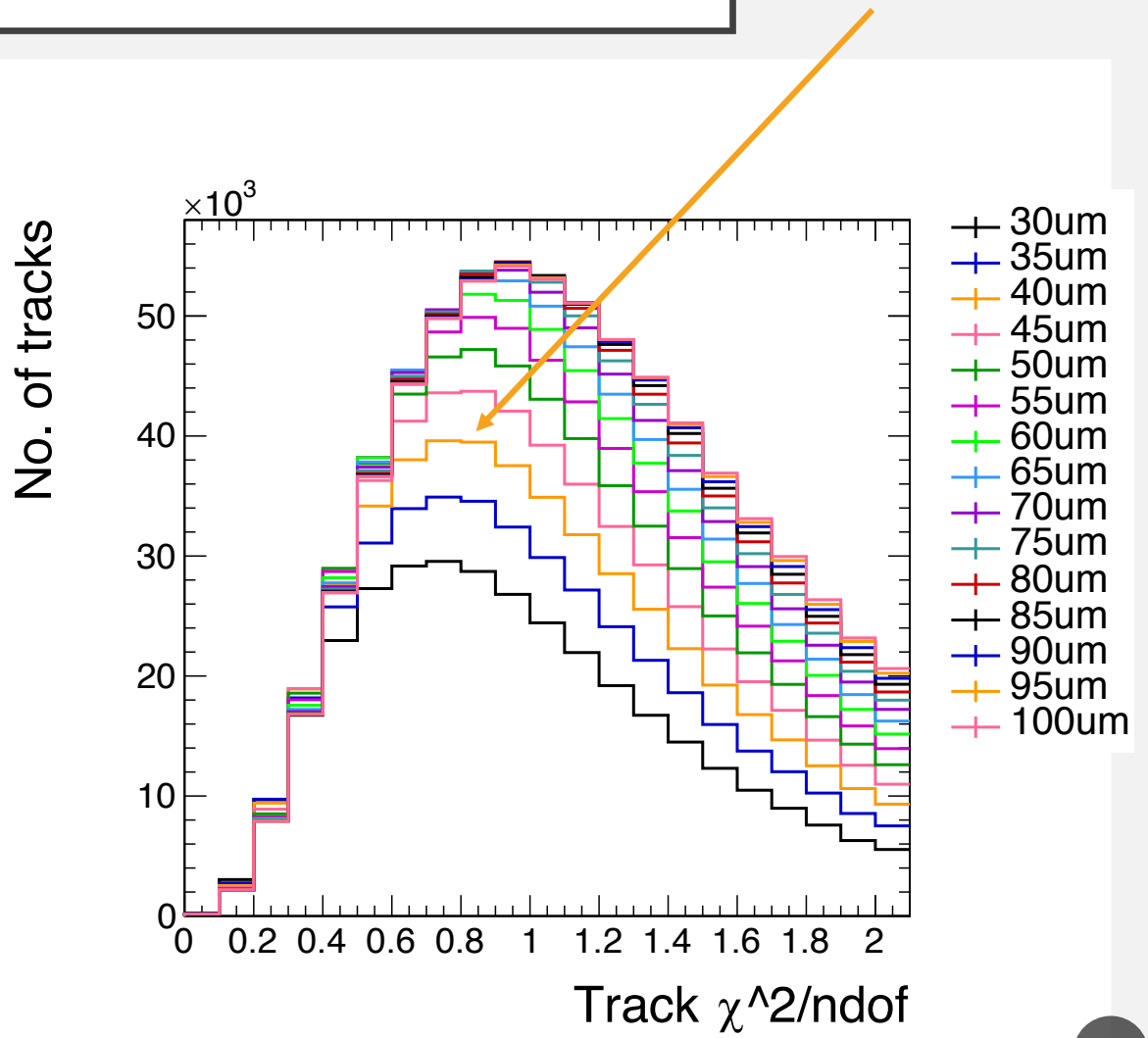
A tracking cut of 40um has a peak χ^2/ndof at ~0.9.



TRACK-DUT ASSOCIATION CUT

- Now want to determine the best cut value for DUT-track association in space.
- Note: using the tracking cut just determined of 40um.
- Using run 1013: -25V bias, nominal threshold ~800 electrons.

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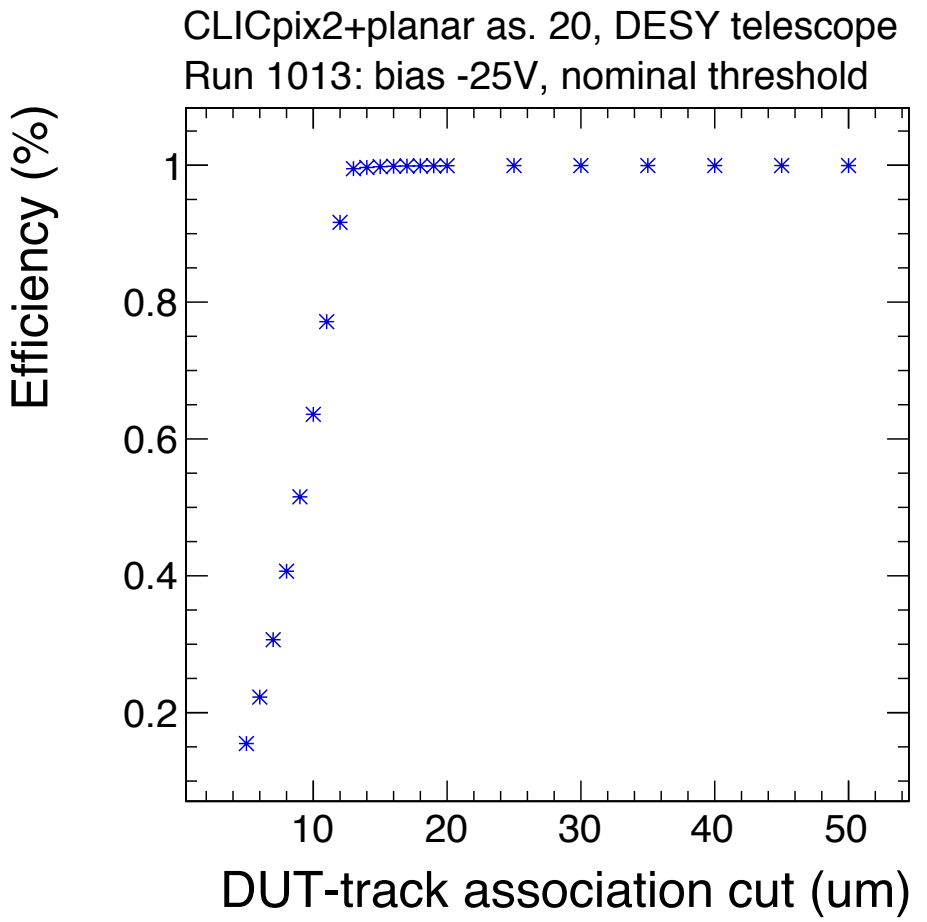
- Right: see a plot of the efficiency at each value.



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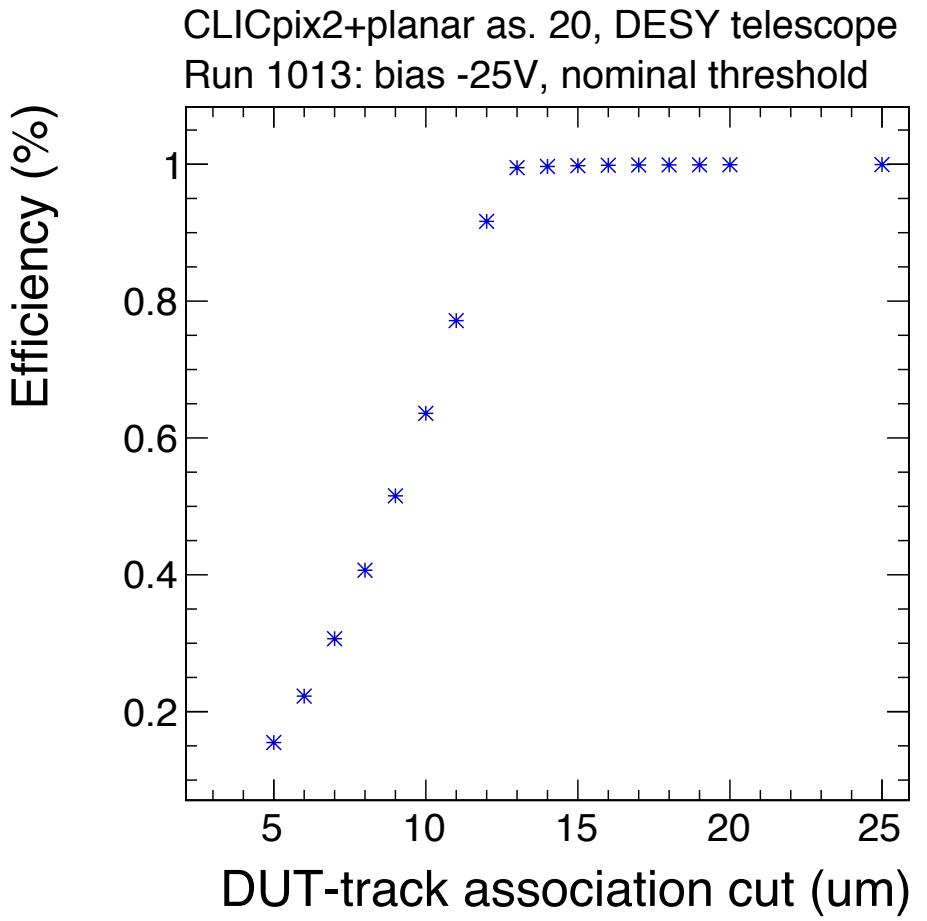
- Right: see a plot of the efficiency at each value.
- See high efficiency (~99.9%) for association cuts down to 13um, then efficiency decreases rapidly.

  → choose a DUT-track association cut of 13um



QUESTIONS

Sanity-check questions before batch processing runs:

- Is 40um a reasonable track cut?
- Is 13um a reasonable DUT association cut?
- Which runs can I apply these cuts to? (change in bias voltage, threshold, DUT alignment)

- Can I apply the same eta correction to each run? (change in bias voltage, threshold, DUT alignment)