
TOP-BOTTOM ASYMMETRY INVESTIGATIONS

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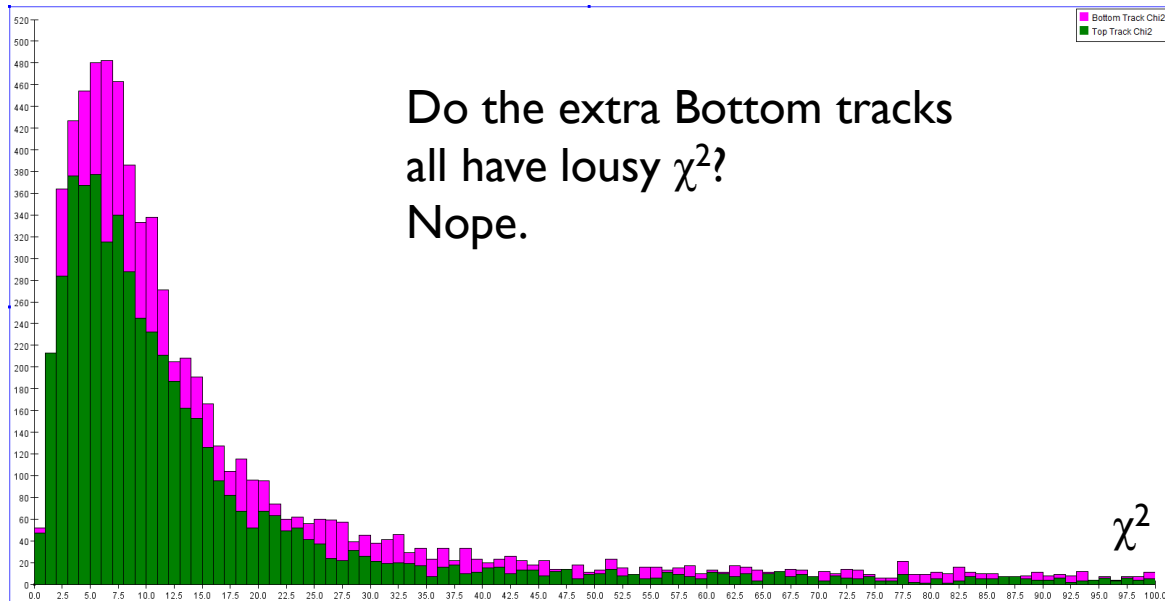
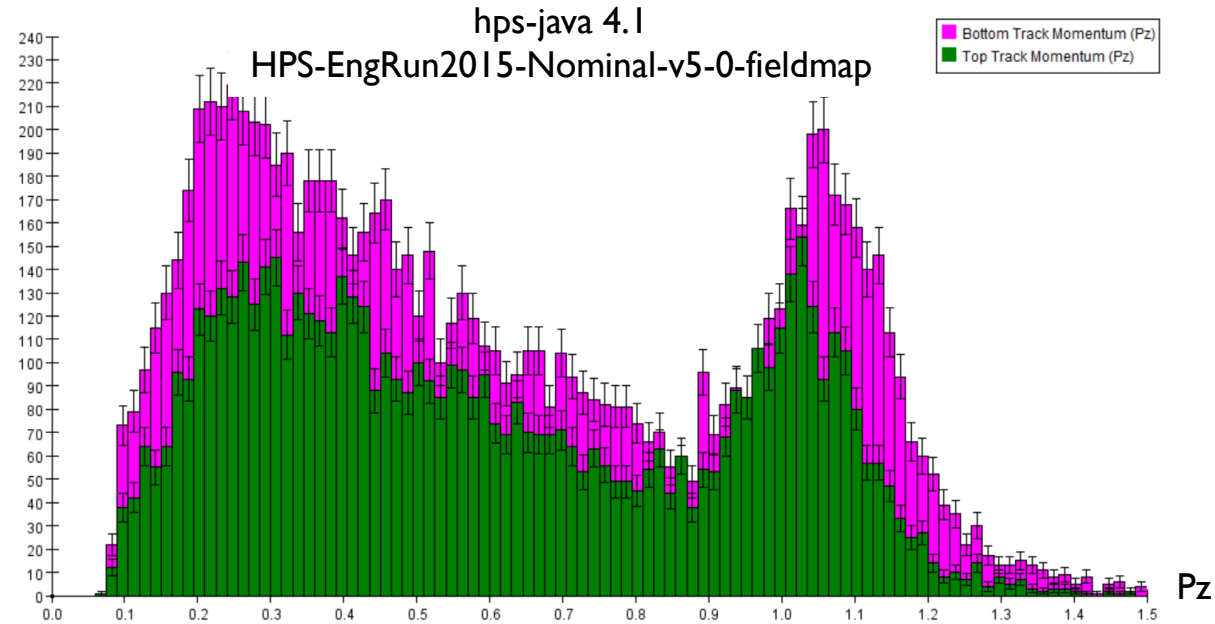


Groundhog hole!

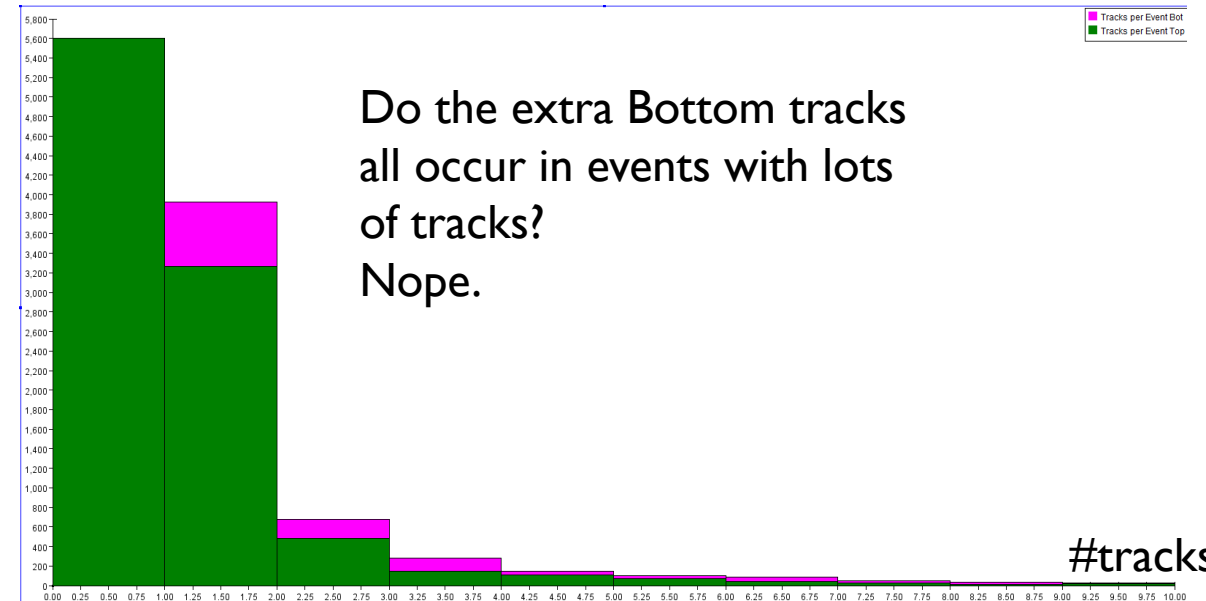
TOP/BOTTOM GBL TRACKS

- Alessandra reported large top/bottom asymmetry in reco efficiency ($\sim 30\%$) that she hadn't seen with previous reconstructions, in 2015 data
- I used my tracking unit tests to plot all GBL tracks, right after track reco
- In data (5772) I saw same asymmetry as Alessandra, even with old hps-java versions / fieldmaps
- But not present in MC !
- Also not present in `/nfs/slac/g/hps3/productionRecon/tweakpass6/output/run5772_3.11.slcio`
 - Whatever recipe was used, I wasn't able to replicate it
- Now I follow the cut-flow: GBL \rightarrow particle reco \rightarrow FEE skimming
 - hps-java 4.1, HPS-EngRun2015-Nominal-v5-0-fieldmap, 10K events in 5772

GBL TRACKS

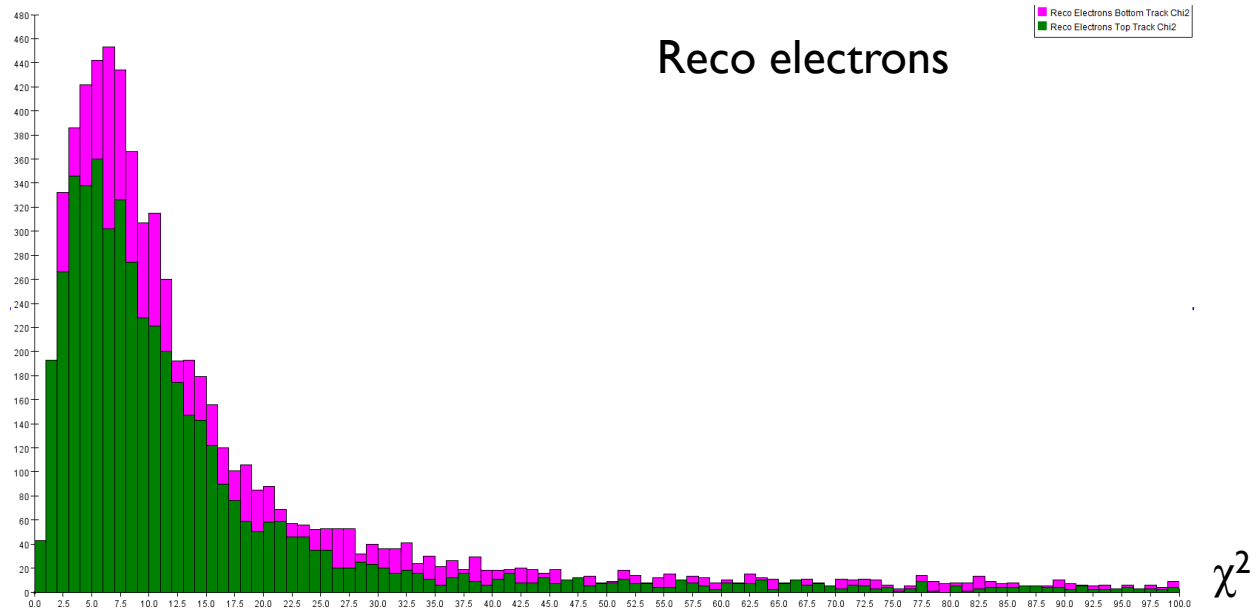


Do the extra Bottom tracks
all have lousy χ^2 ?
Nope.



Do the extra Bottom tracks
all occur in events with lots
of tracks?
Nope.

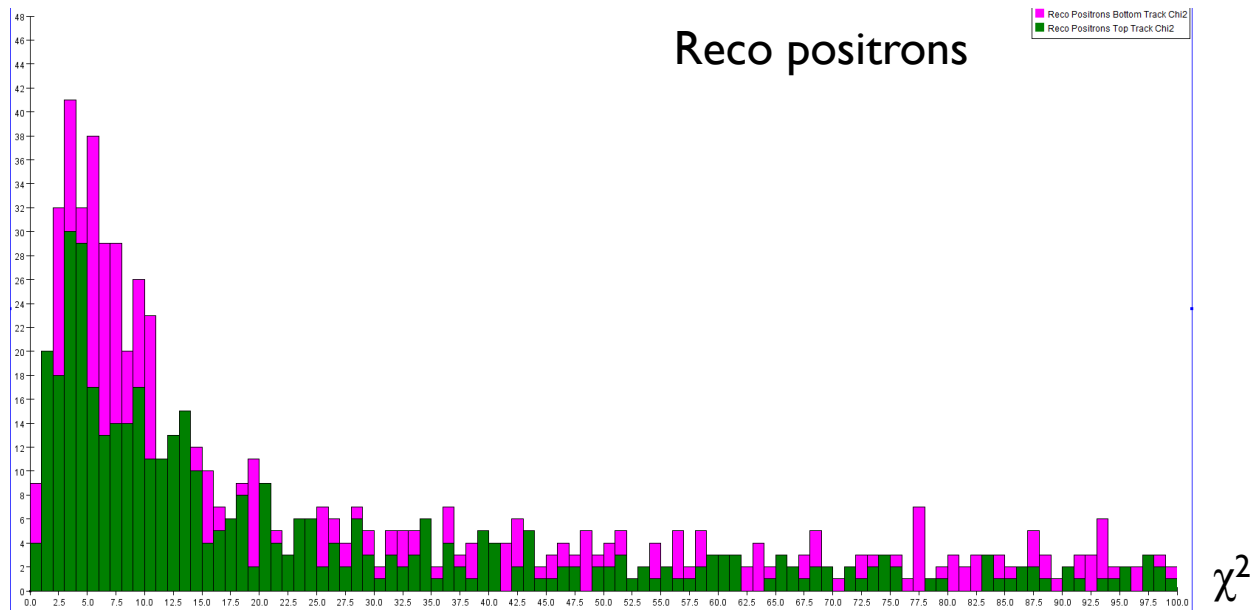
RECO PARTICLES



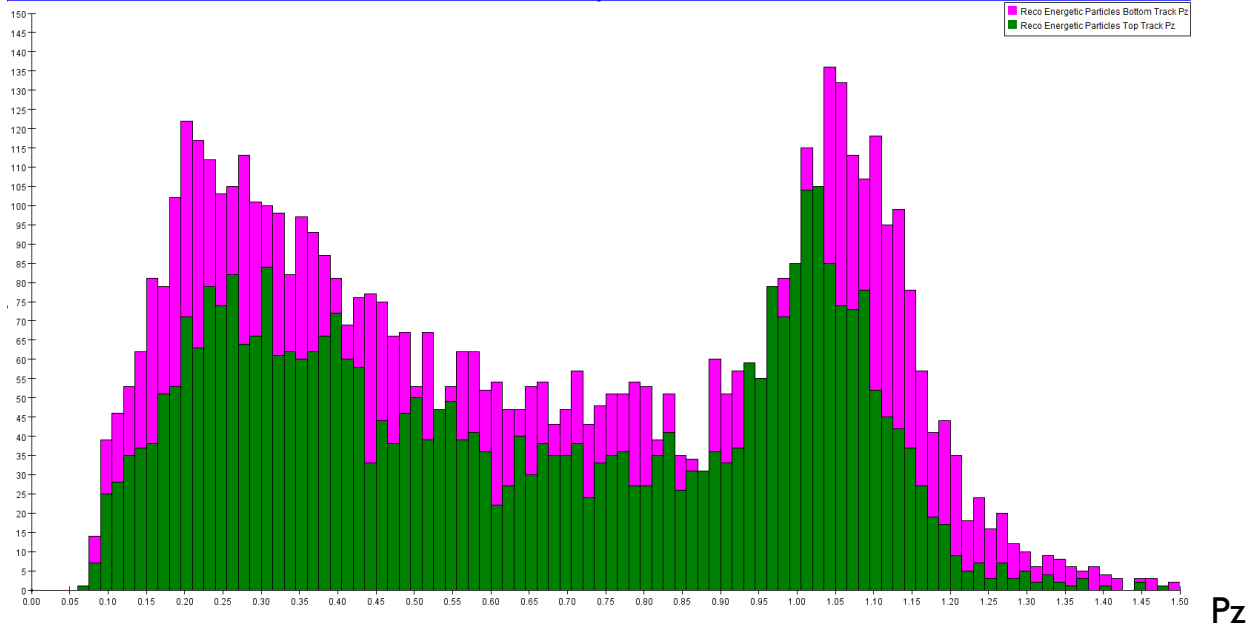
Particle reconstruction:

- Applies some track-cluster matching and basic quality cuts. Maybe these cut out the extra bottom tracks?
- Maybe electrons have different asymmetry than positrons?

Nope.

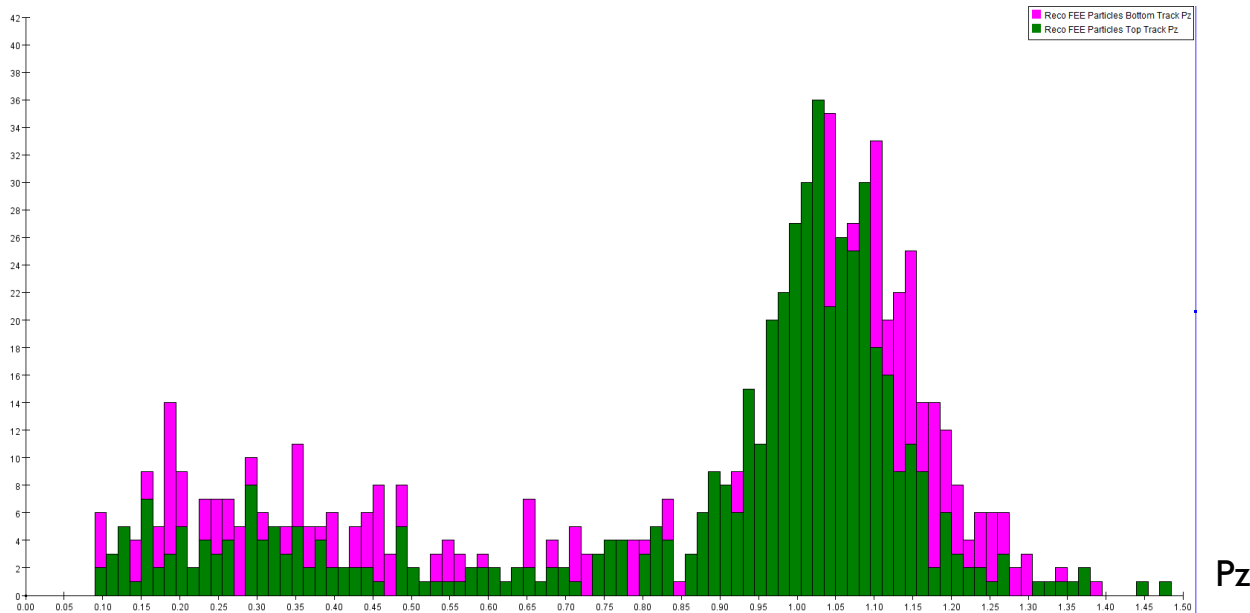


FEE SKIMMED



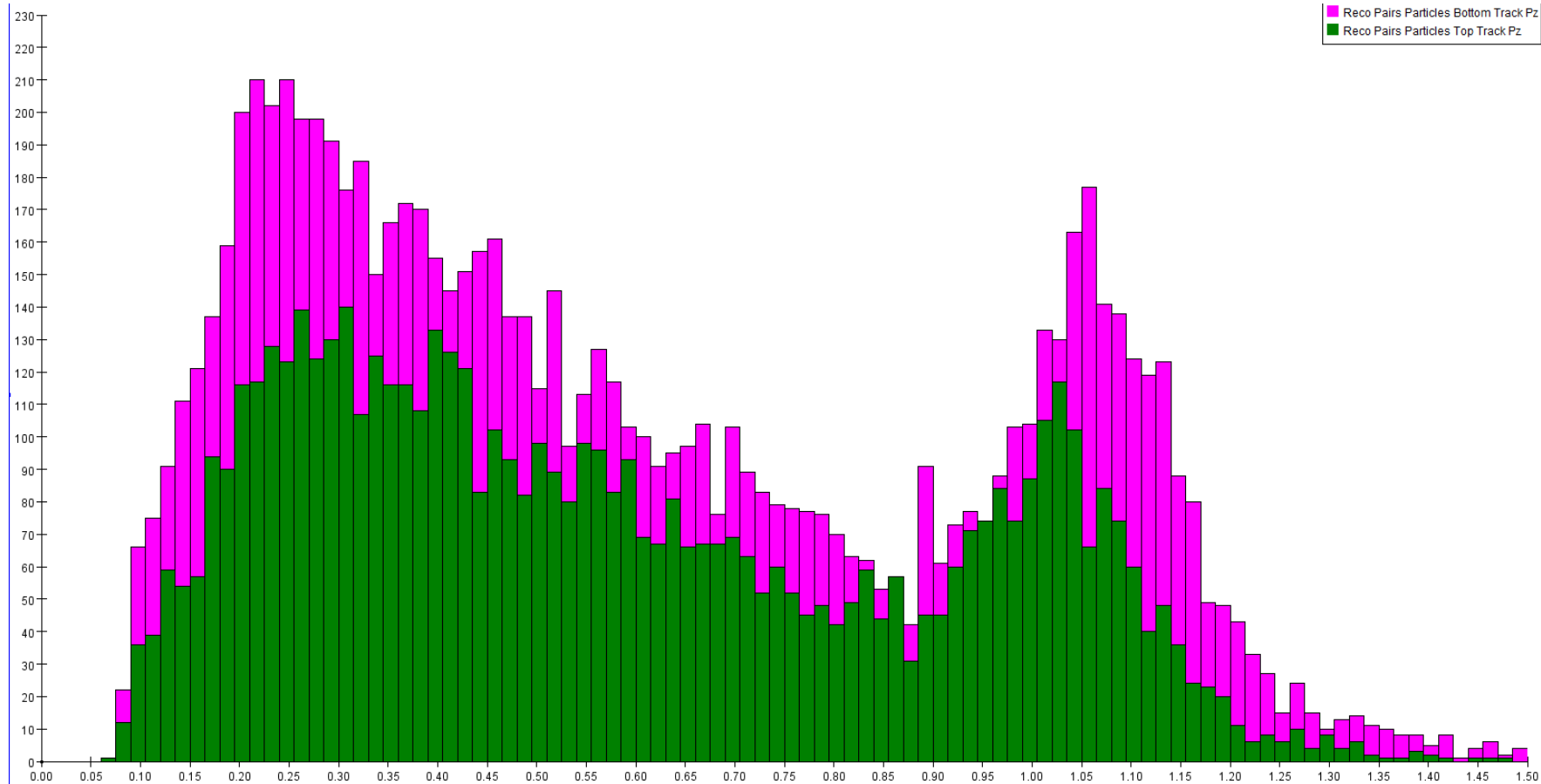
FEE Skim requirements:

- Min cluster energy
Does this reduce the asymmetry? Nope.



- Singles trigger
Reduces asymmetry at medium/high Pz

BACK TO GBL TRACKS ...

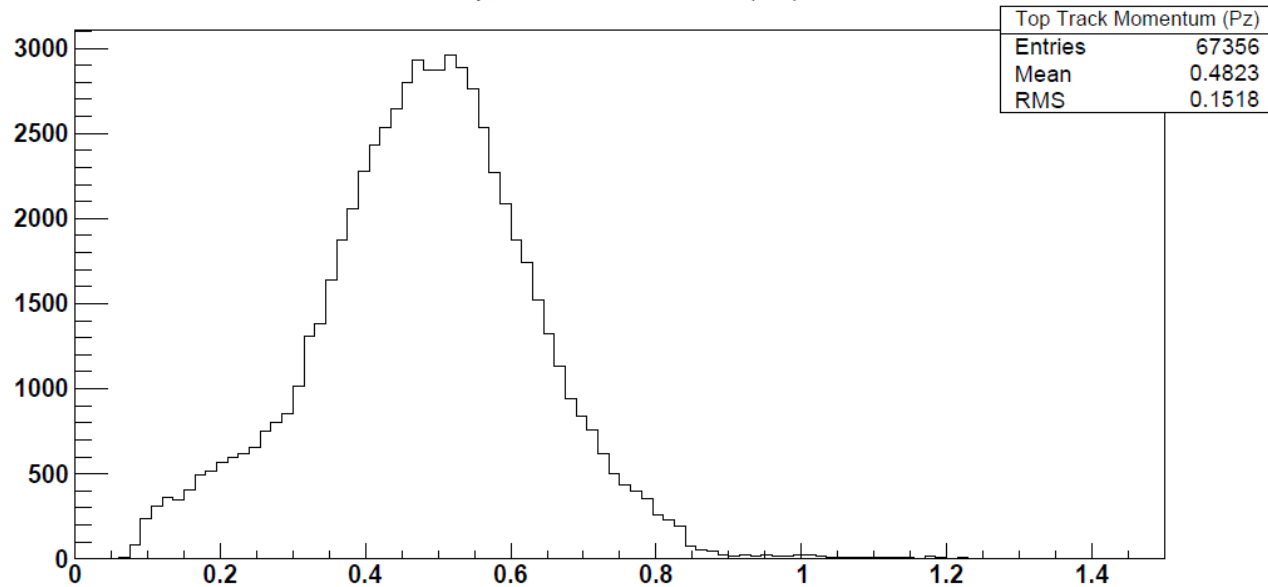


Does the asymmetry show up in Pairs-triggered?
Yes.

P_z

... IN TWEAKPASS6

Top Track Momentum (Pz)



Fetches from:

`/nfs/slac/g/hps3/productionRecon/tweakpass6/
output/run5772_3.l.l.slcio`

What was the magic recipe here?!

Bottom Track Momentum (Pz)

