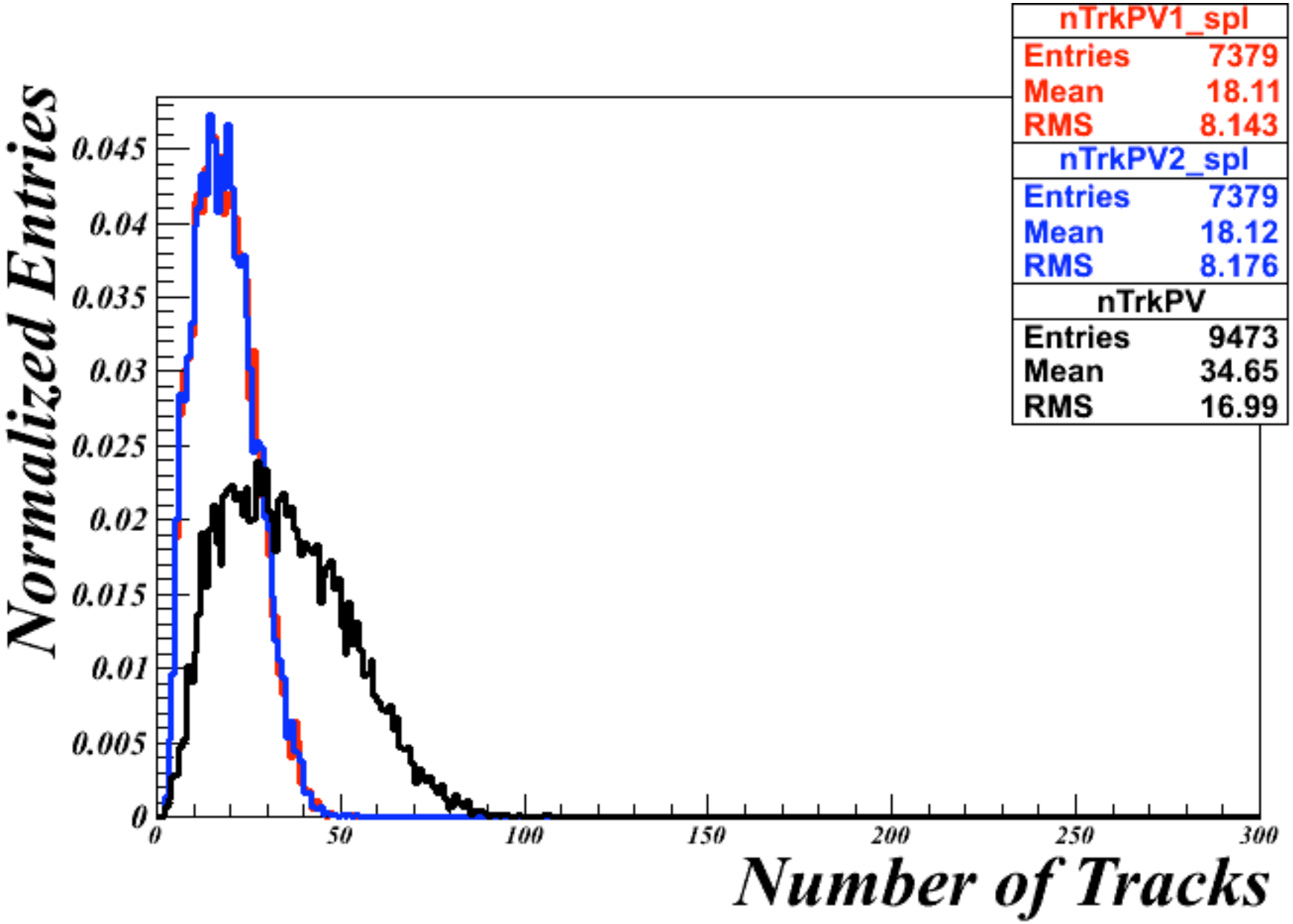
Large pT tracks impact to reconstructed Vertex positions

- The concern before using the IP w.r.t. pvtx:
  High pT lepton may pull the recoVertex position b/c a higher weight

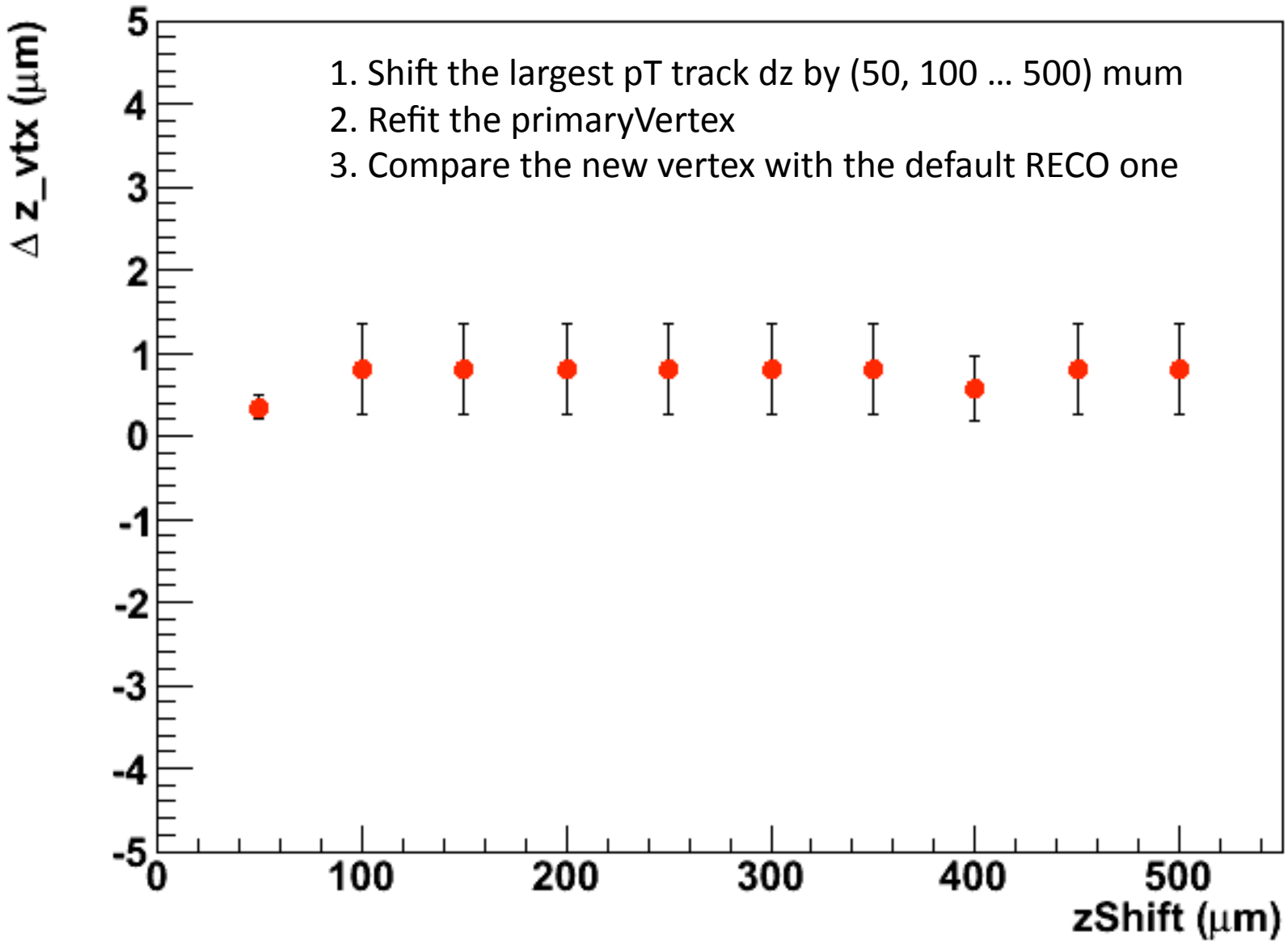
- To test this:
  -Shift the dZ of the high pT lepton(s) by a given distance
  -Fit the primaryVertices using the zShifted tracks
  -Look at the difference in the recoVertex positions w.r.t. RECO value

- Samples:
  /Summer09/Wmunu/GEN-SIM-RECO/MC_31X_V3-v1
  /Summer09/Zee/GEN-SIM-RECO/MC_31X_V3-v1

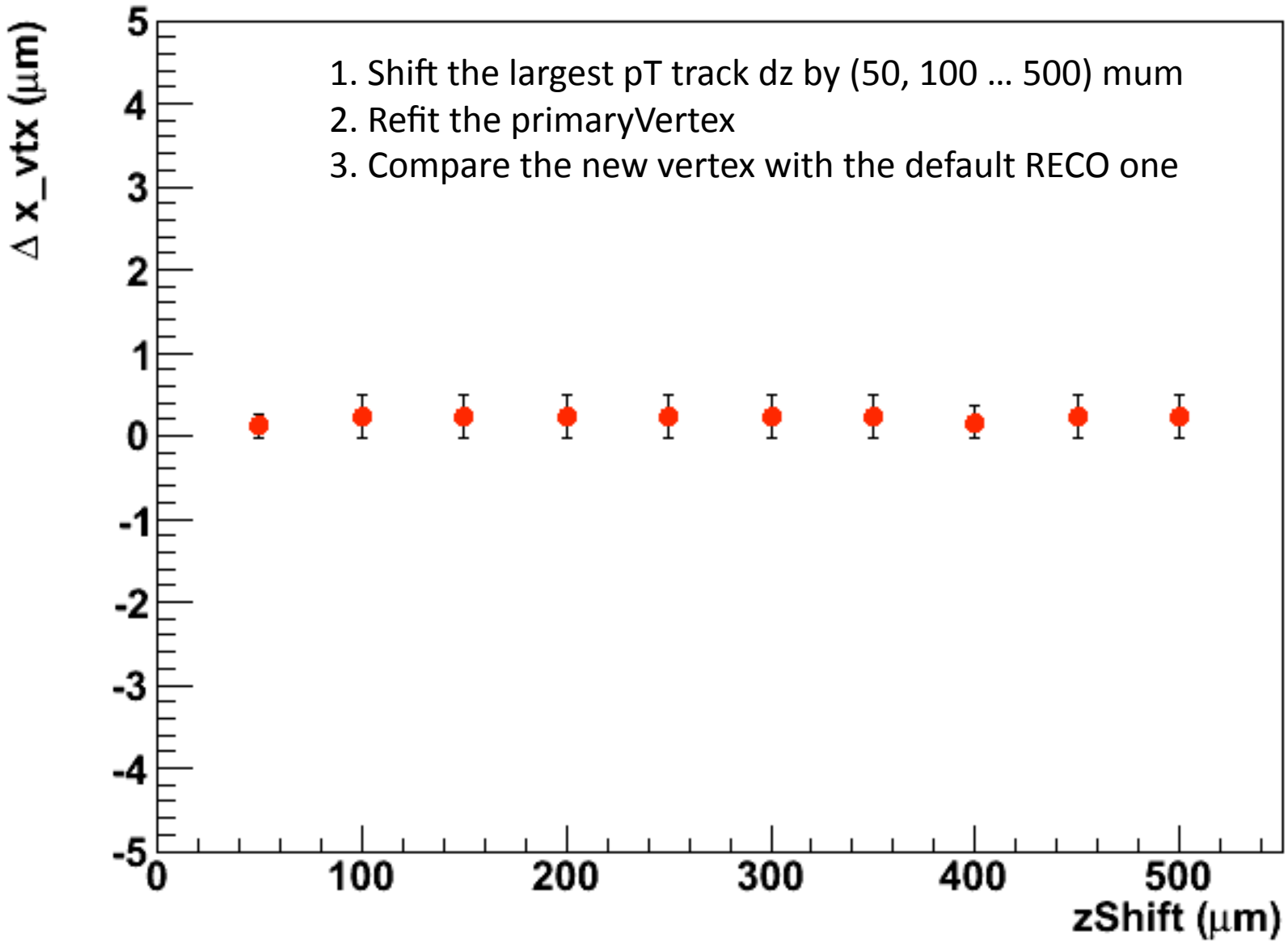
W-> munu nTracks in PV



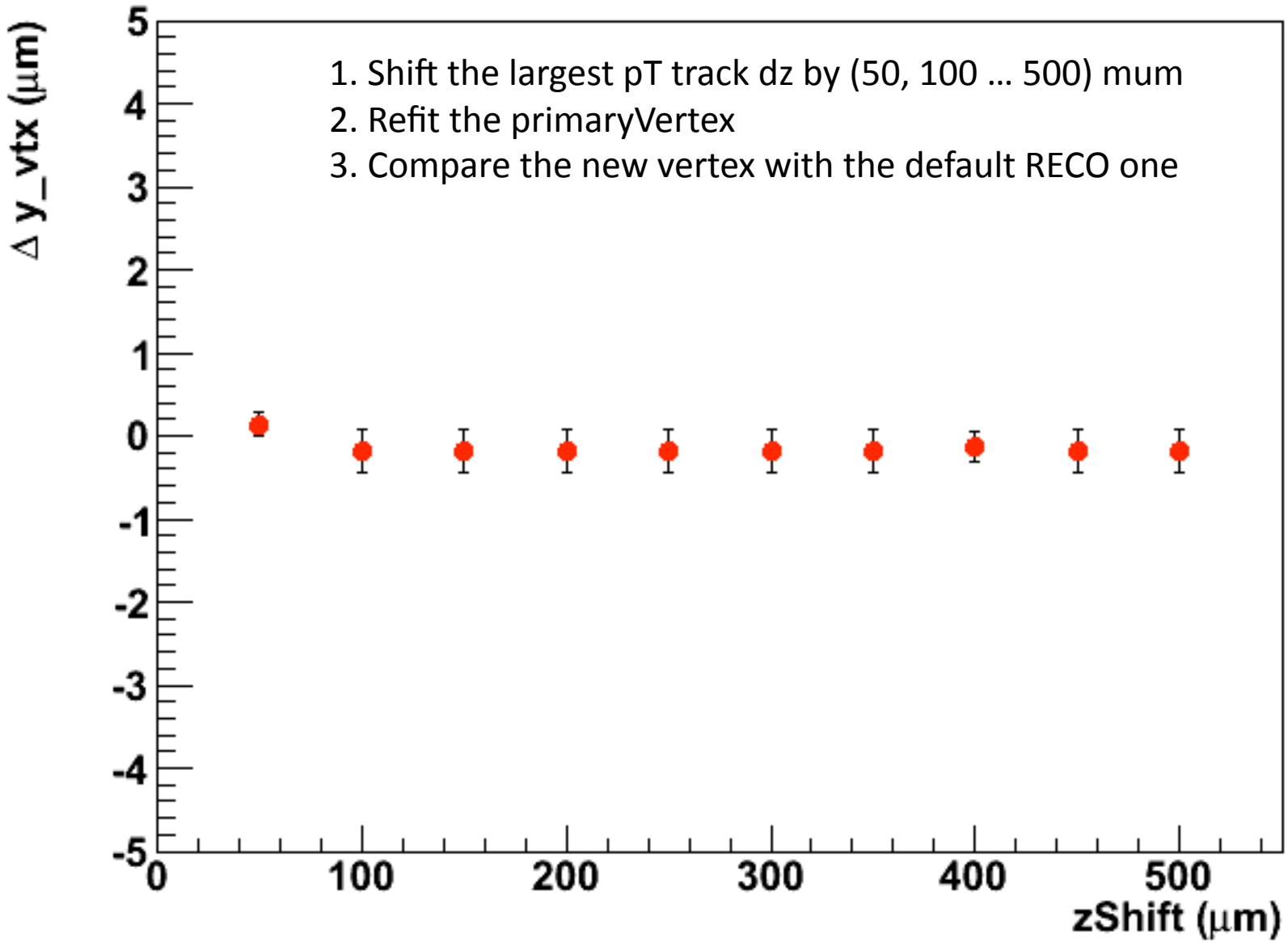
W-> munu z(vtx) difference



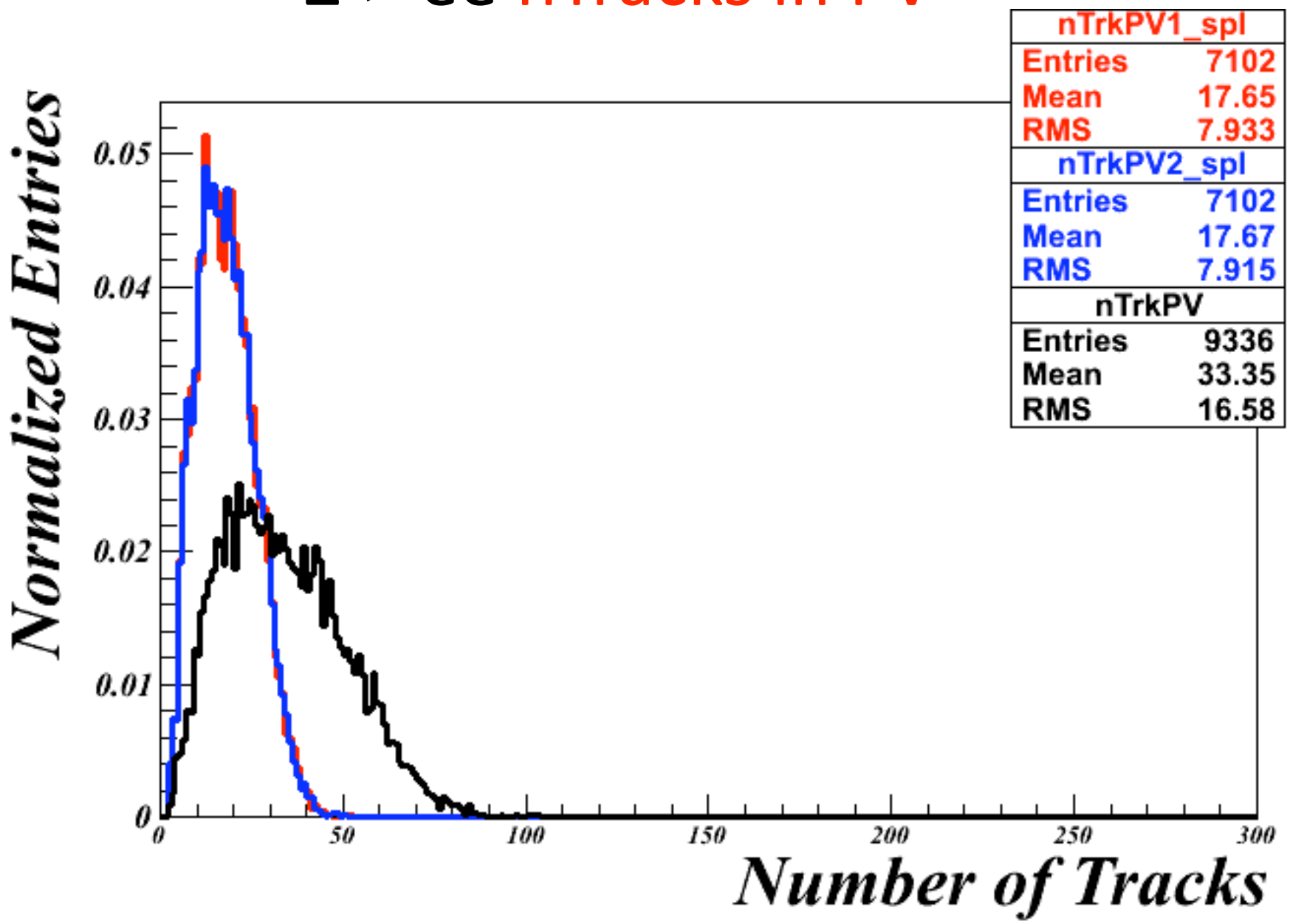
W-> munu x(vtx) difference



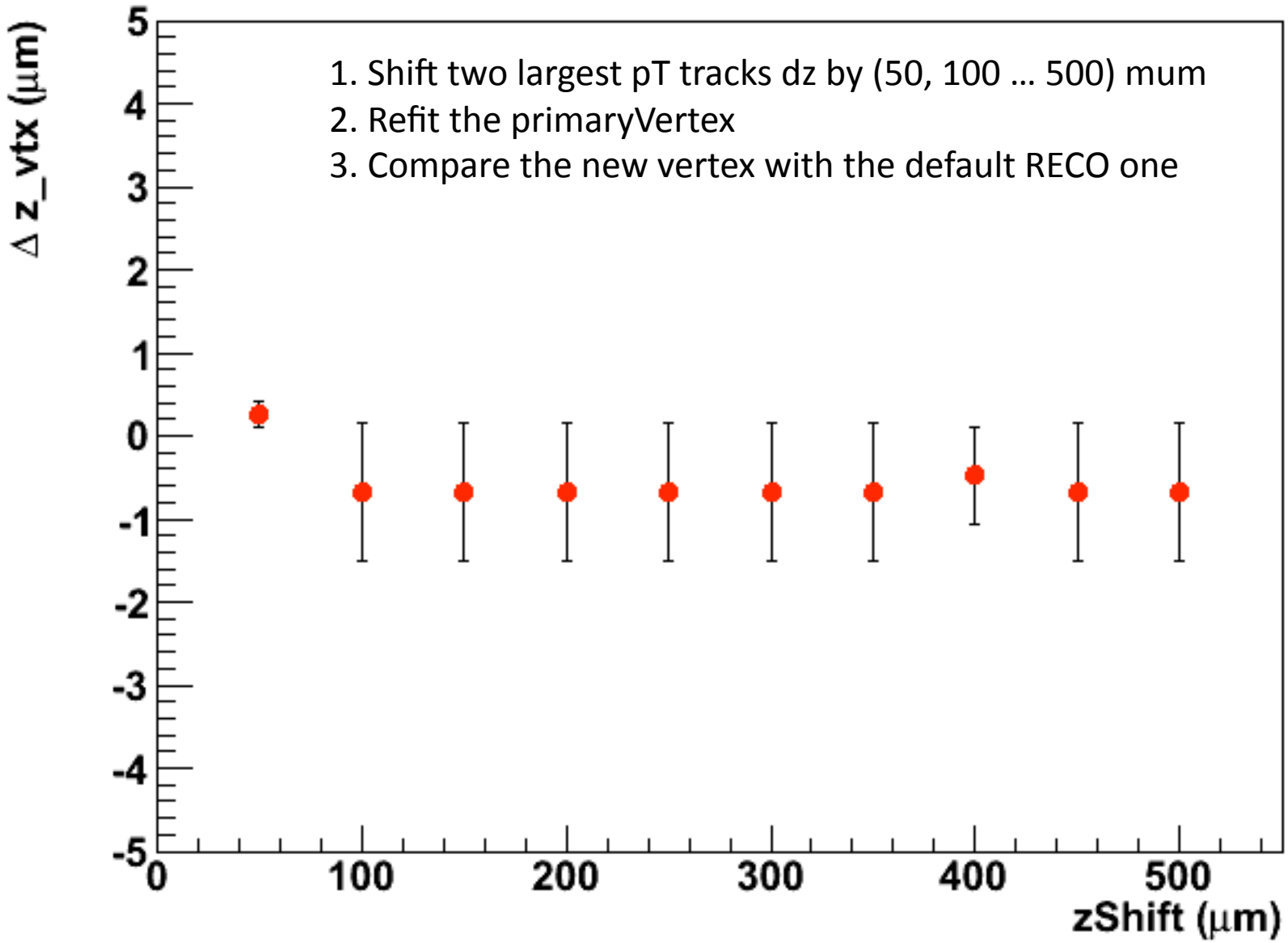
W-> munu y(vtx) difference



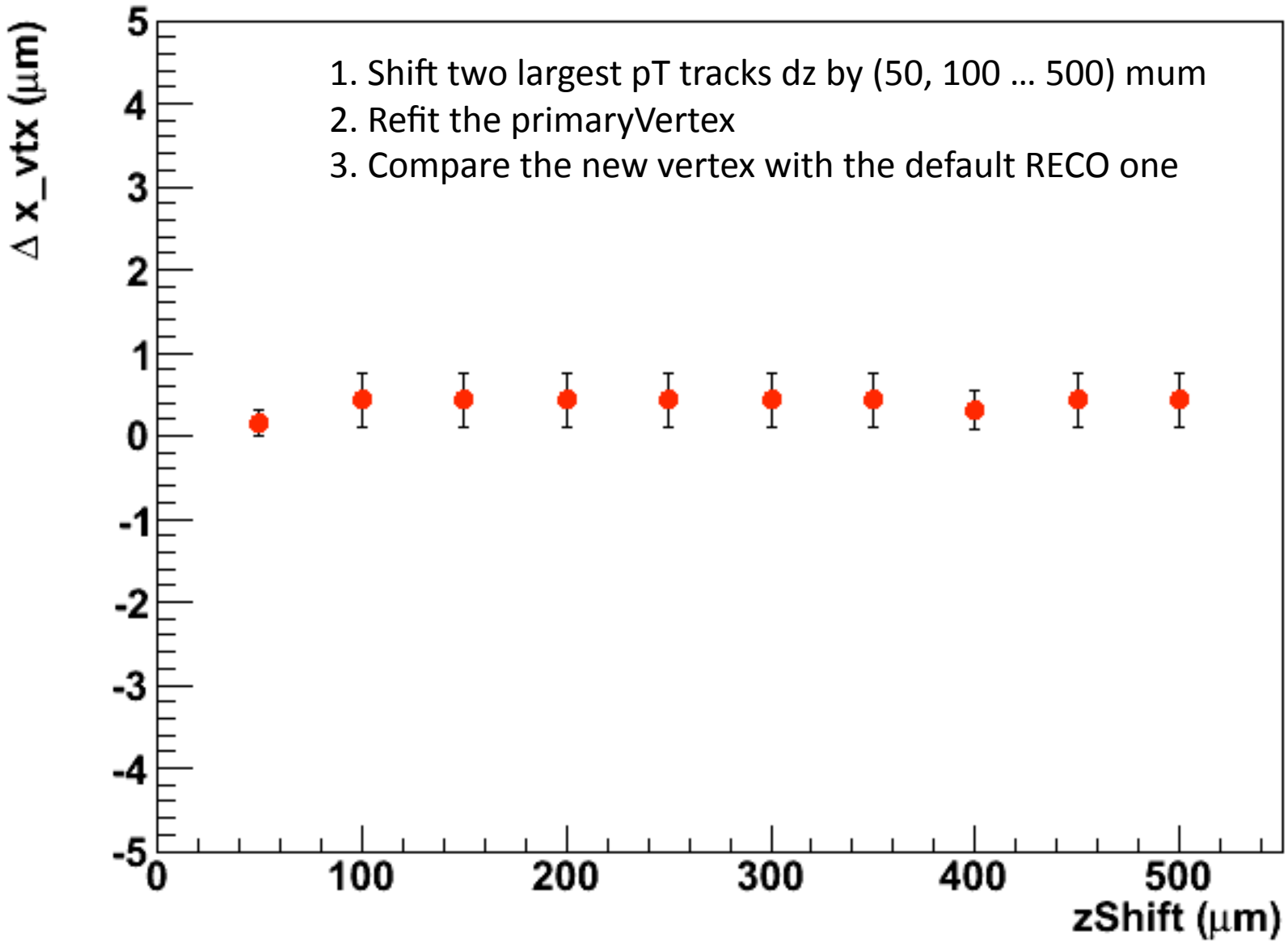
Z-> ee nTracks in PV



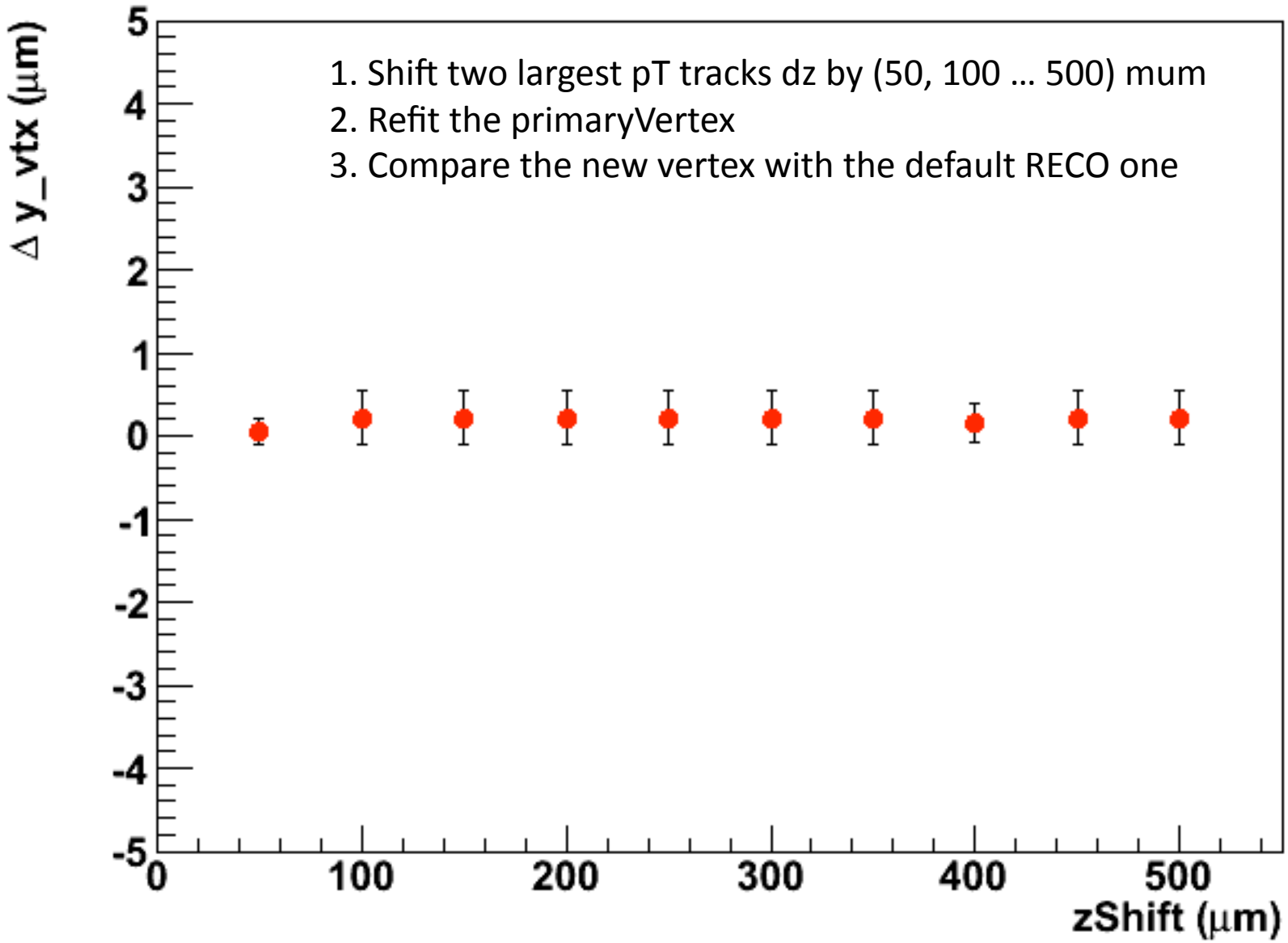
Z-> ee z(vtx) difference



Z-> ee x(vtx) difference



Z-> ee y(vtx) difference



Conclusion and Plans

Conclusion

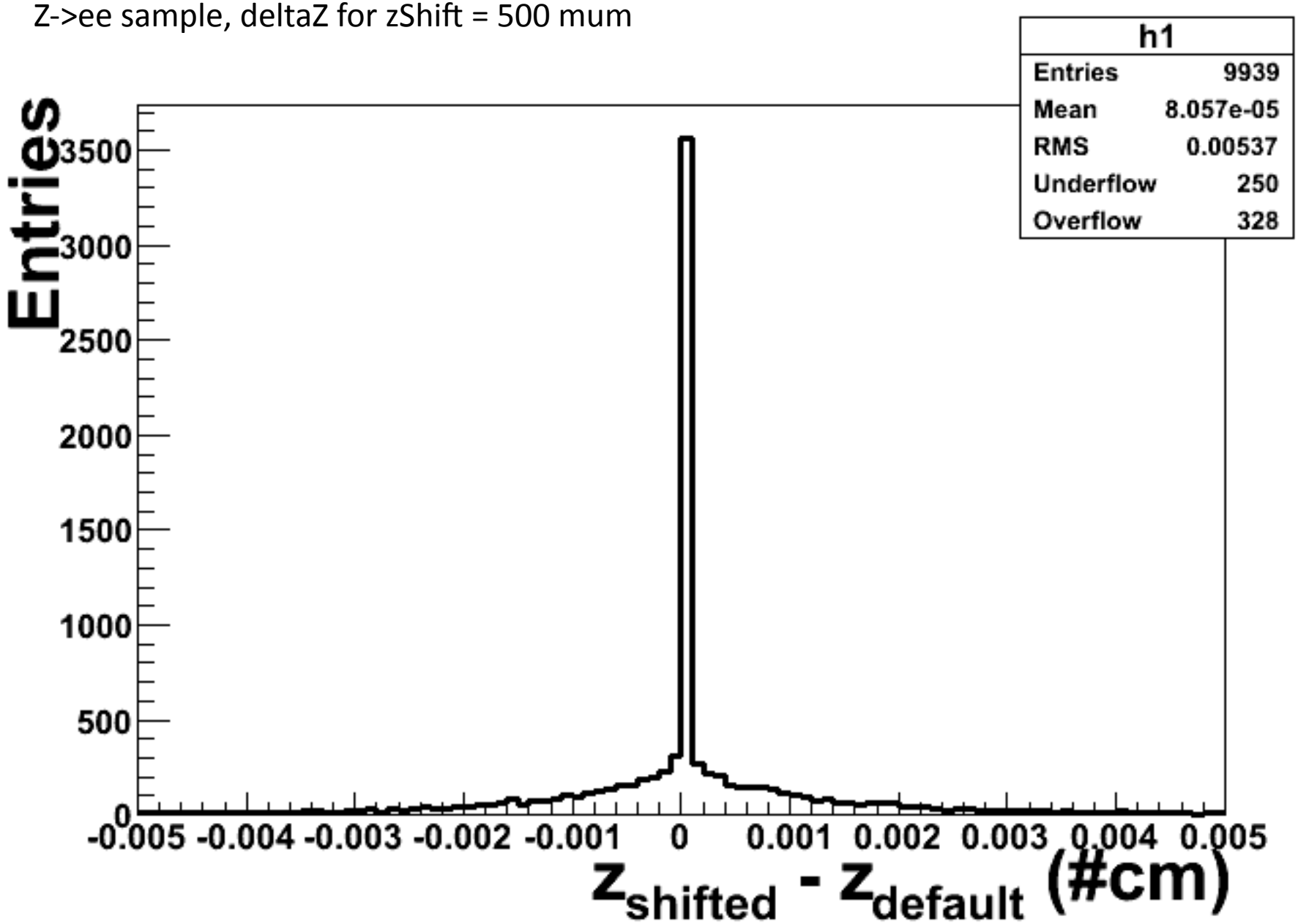
- Displaced high pT leptons get de-weighted significantly
- Only a few high pT leptons won't pull the pvtx positions by more than 2 mum
- We should be able to define the IP w.r.t. pvtx positions

Plans

- Look at the track IP w.r.t. pvtx, get the signficance, pulls etc
- For muons and electrons, look at the trackWeight in the pvtx

trackWeight = $1 \Big/ \left(1 + \exp^{\chi^2 - \chi^{cutoff} / 2T}\right)$

trackWeight = 0.0 if the track is not used in the pvtx

BACKUP SLIDES

Z->ee sample, deltaZ for zShift = 500 mum