

CalTrk Match Simulation

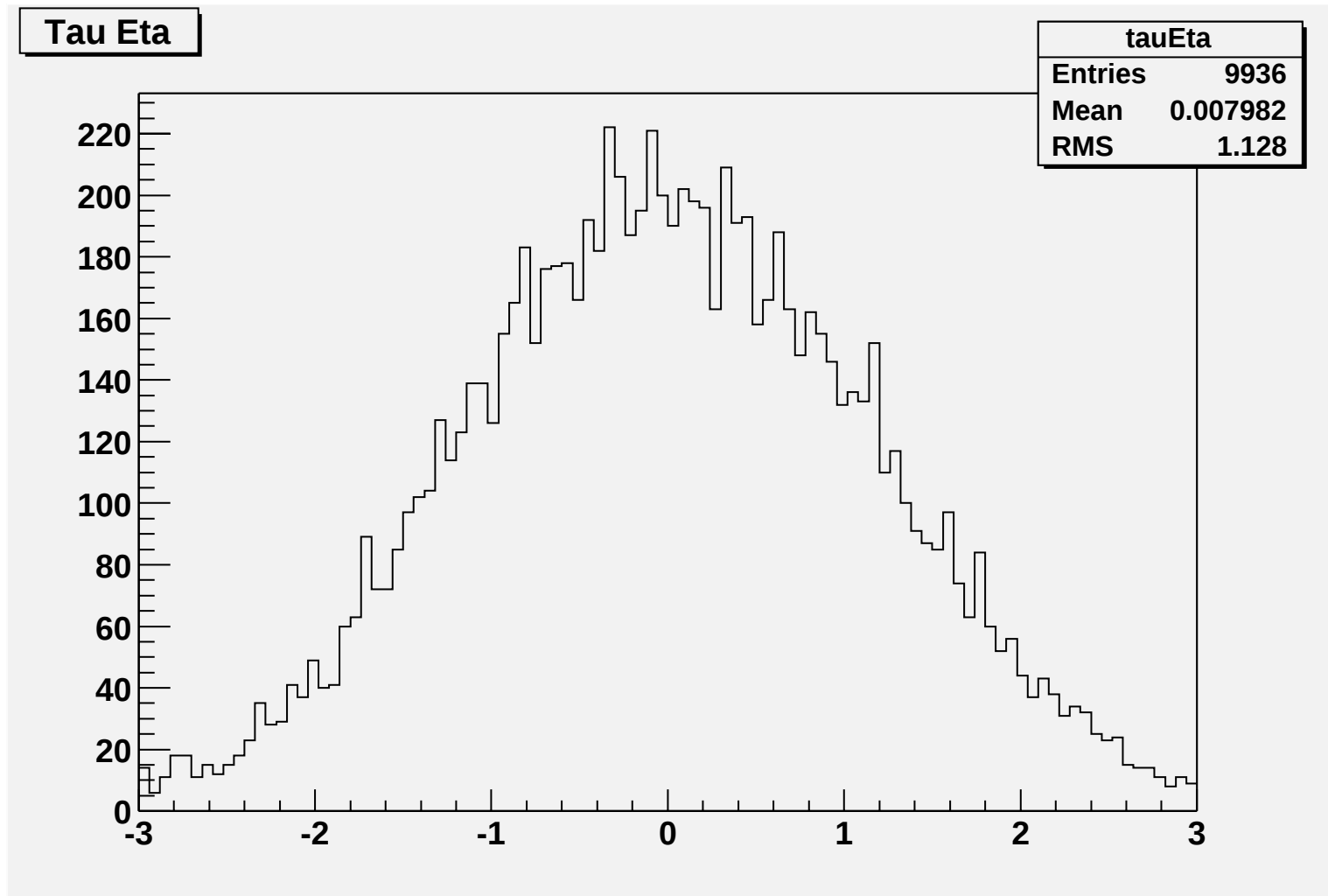
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Introduction

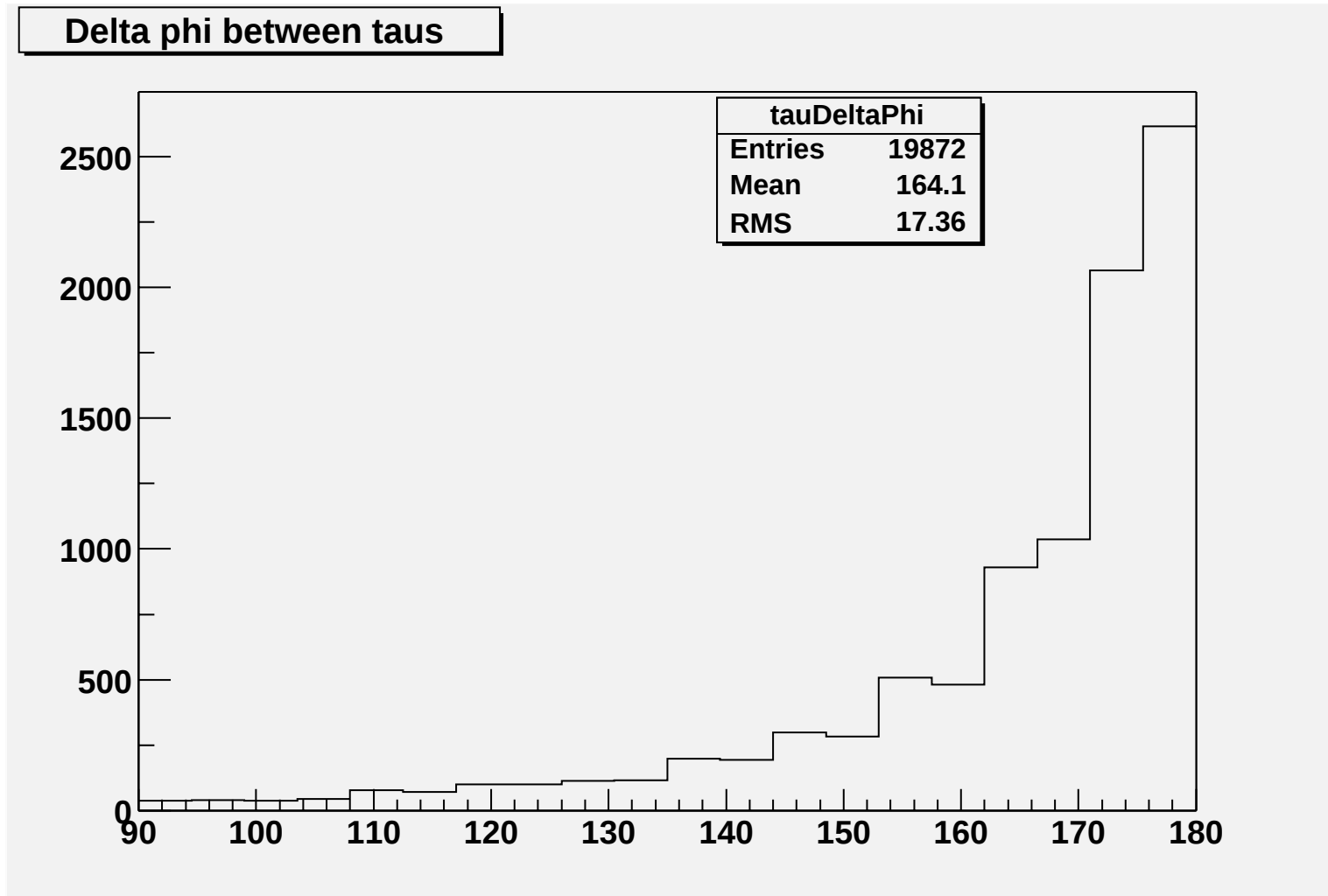
- Studies shown here are based on running `tsim_1112` and `tsim_11cal2b` in the same job, then doing roottuple analysis on the output
- Cal trigger quantities are taken from the `Jet211TTjets` block of `tsim_11cal2b`'s output
- Most of the plots I'll show are based on a MC sample of 135 GeV Higgs decaying to $\tau\tau$
 - Some results for minbias MC are also presented

τ Kinematics

- Pseudorapidity:



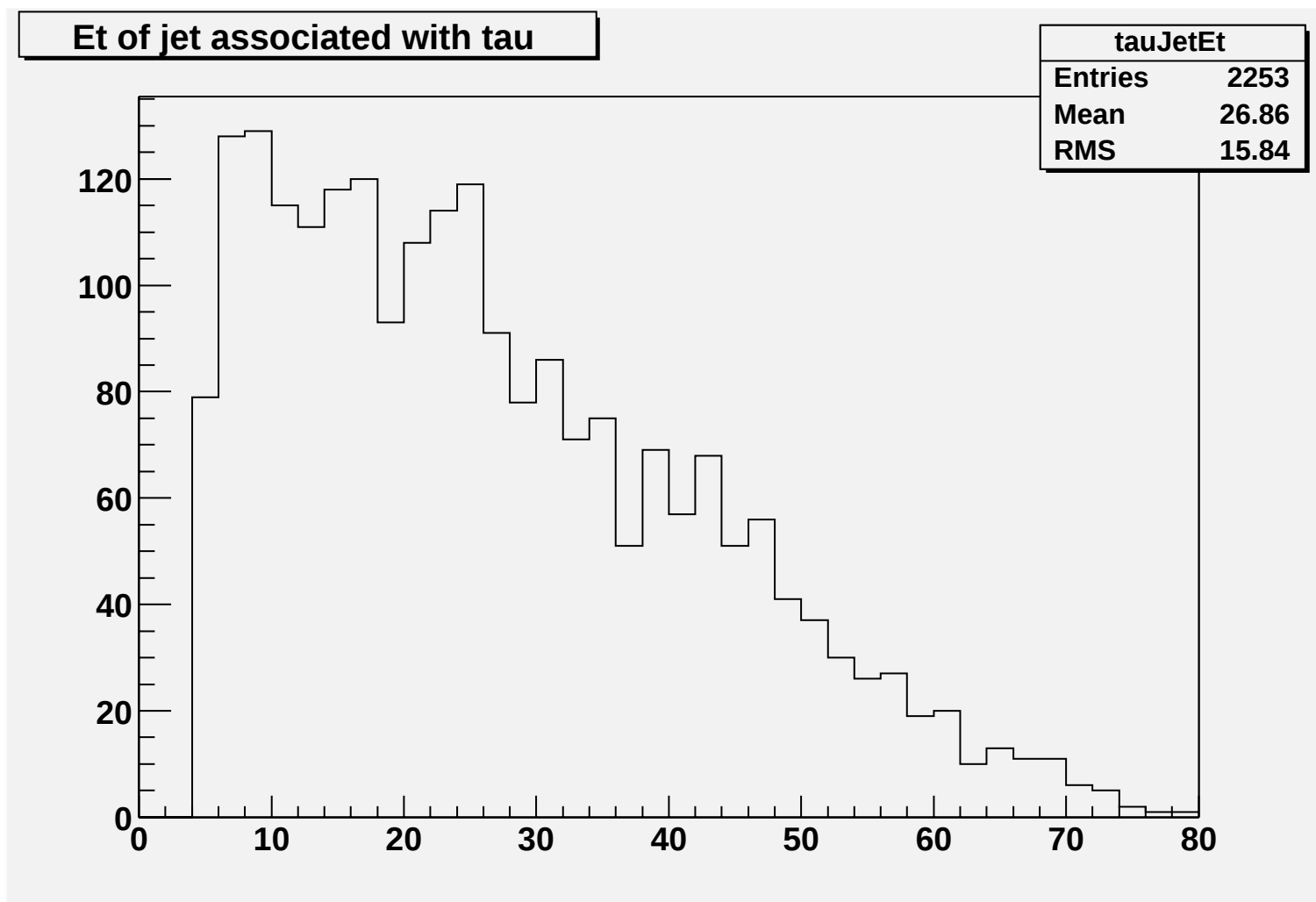
$\Delta\phi$ between τ 's:



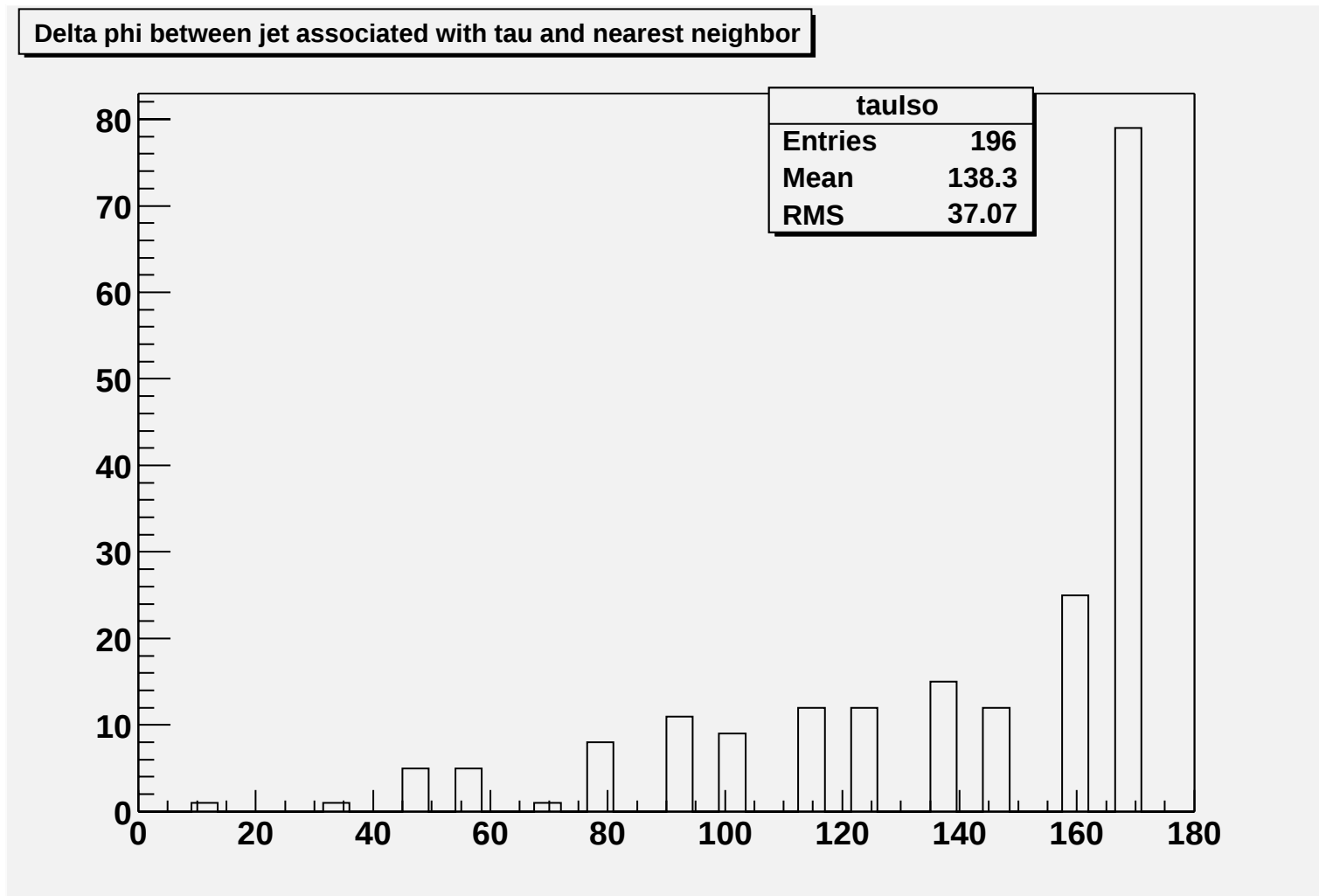
- Cut on η probably won't help τ trigger, but isolation cut may

L1Cal2b response to τ 's

- E_T of trigger jets with centroid within 20 degrees of true τ ϕ :



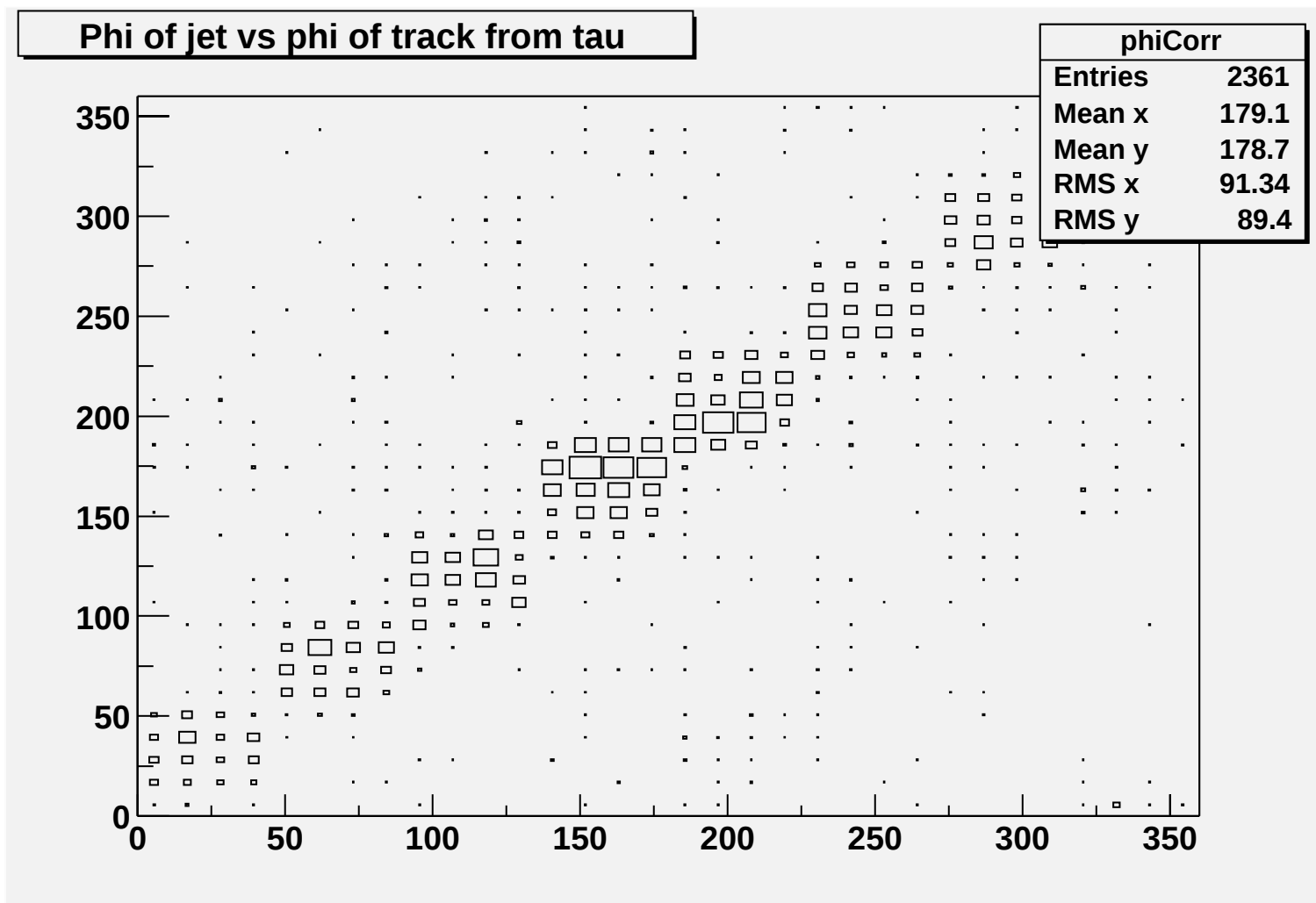
$\Delta\phi$ between jet matched to τ and next-closest jet:



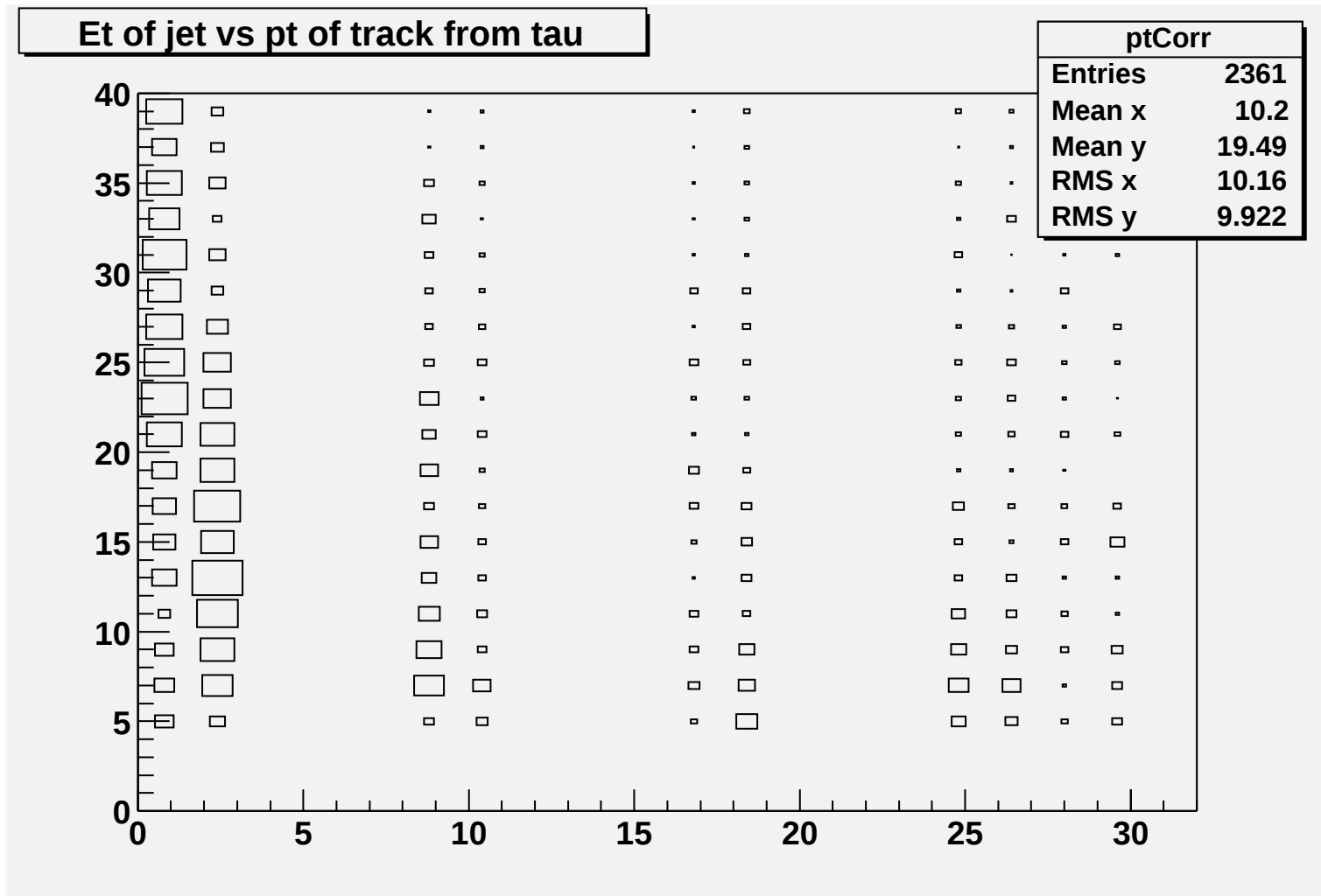
- Isolation cut in trigger may be helpful

Trigger correlations

- Compare ϕ between L1CTT tracks and trigger jets nearest to the true τ direction:



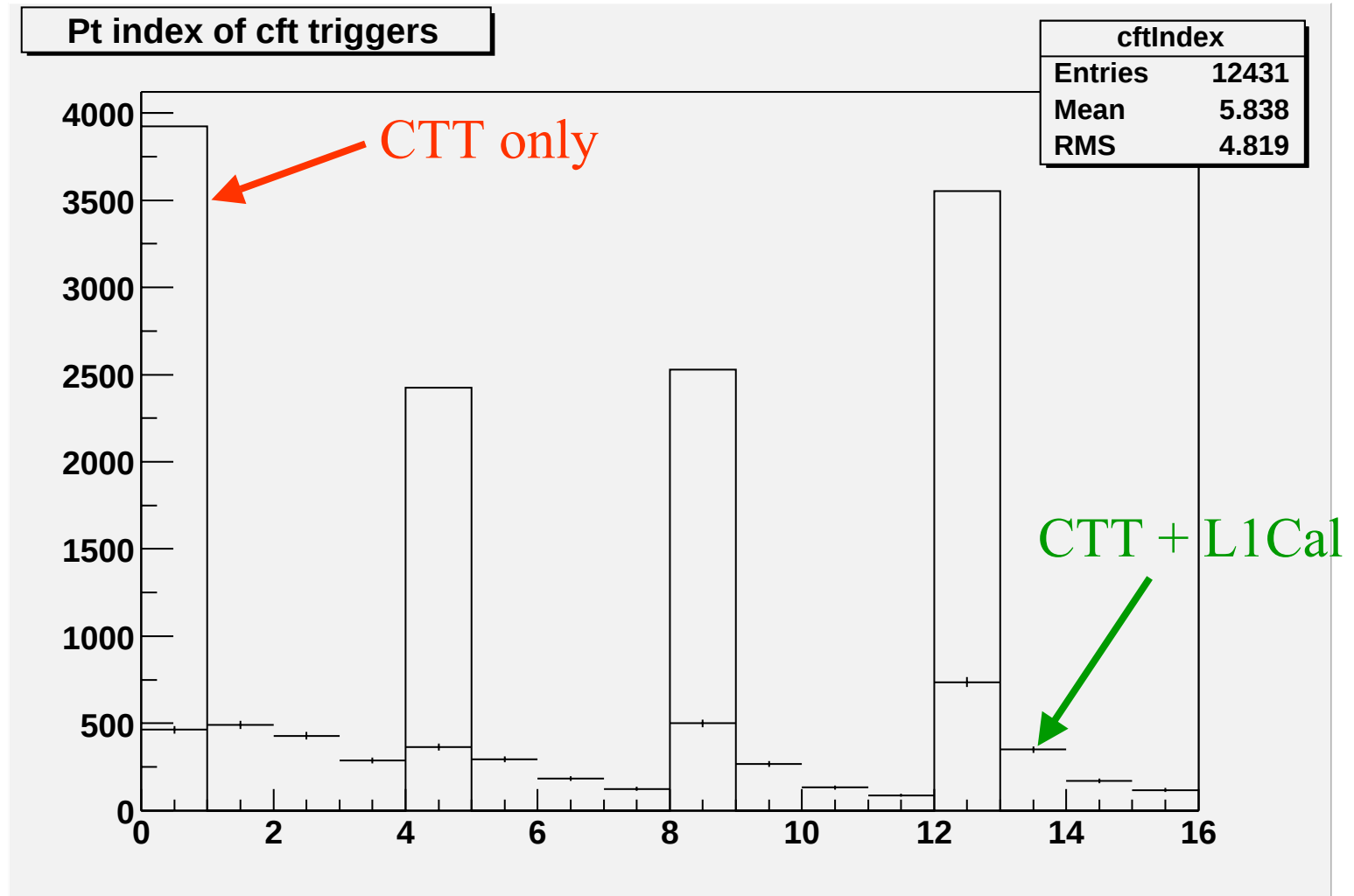
- Jet E_T vs. L1CTT curvature:
 - i.e., low L1CTT values correspond to high p_T



CalTrk Match

- For the purposes of the following plots, I've implemented a simple algorithm that declares a match whenever a track is in a phi sector that is also occupied by a jet centroid
 - Note that this is done at roottuple level, not within tsim!
- I define a set of straw man trigger bits based on curvature of L1CTT track (2 bits) and E_T threshold passed by jet
 - 4 E_T thresholds are available
 - I (arbitrarily) set the lower limits to be 4, 20, 35, and 50 GeV

Trigger Bits Passed (Higgs signal)



Trigger Bits Passed (minbias MC)

