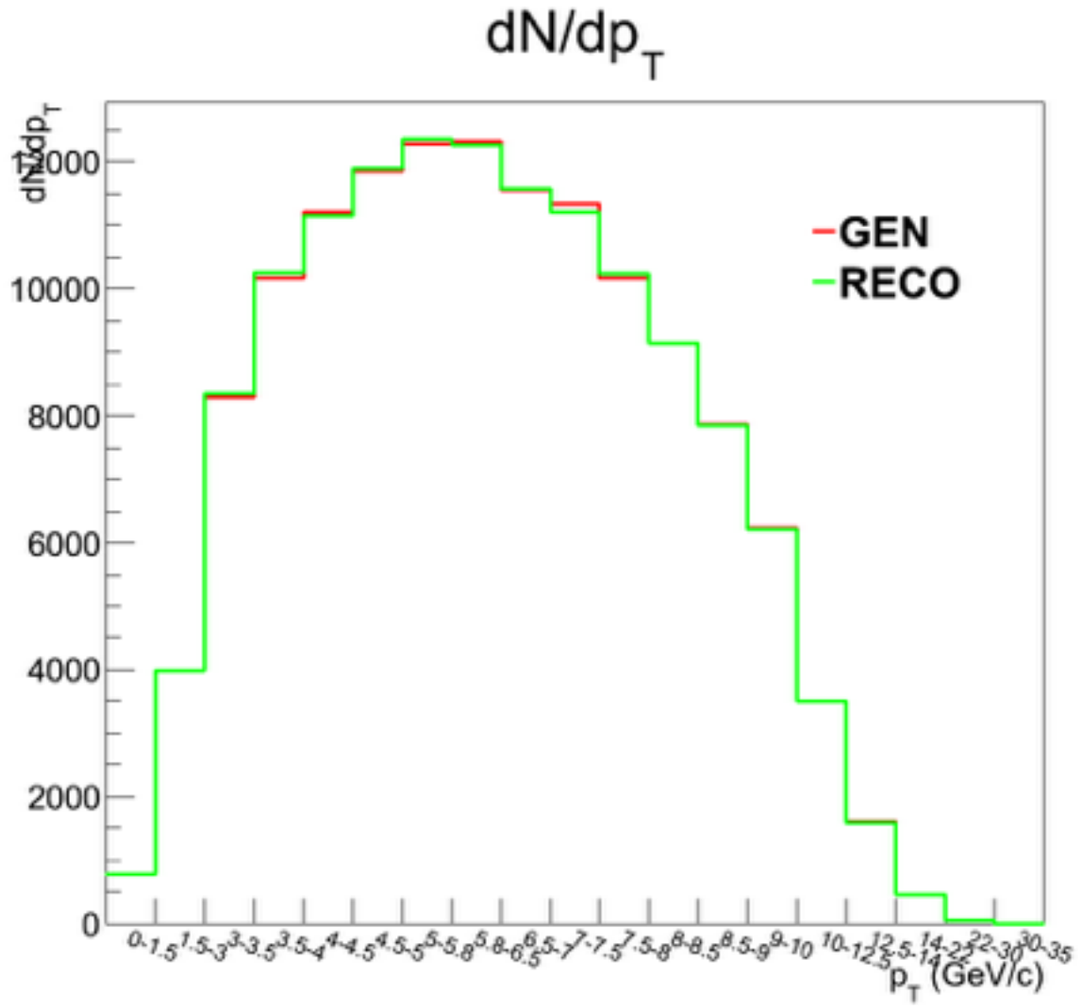
Unfolding study

KiSoo Lee

sample

- Reco-Gen matched prompt file used
- location
  - /home/songkyo/kyo/pPbDataSample/EfficiencySample/tot_PromptJpsi_PYTHIAboosted_1st_STARTHI53_V27_noMuID_sglTrig_genMatch_20150205.root
- condition
  - reco: both muon satisfy kinematic cut and soft muon ID cut, 0< ptJpsi < 30, -2.4 < yJpsi < 2.4, 2.9 <= mJpsi < 3.3
  - gen: both muon satisfy kinematic cut and soft muon ID cut, 0< ptJpsi < 30, -2.4 < yJpsi < 2.4, 2.6 <= mJpsi < 3.5

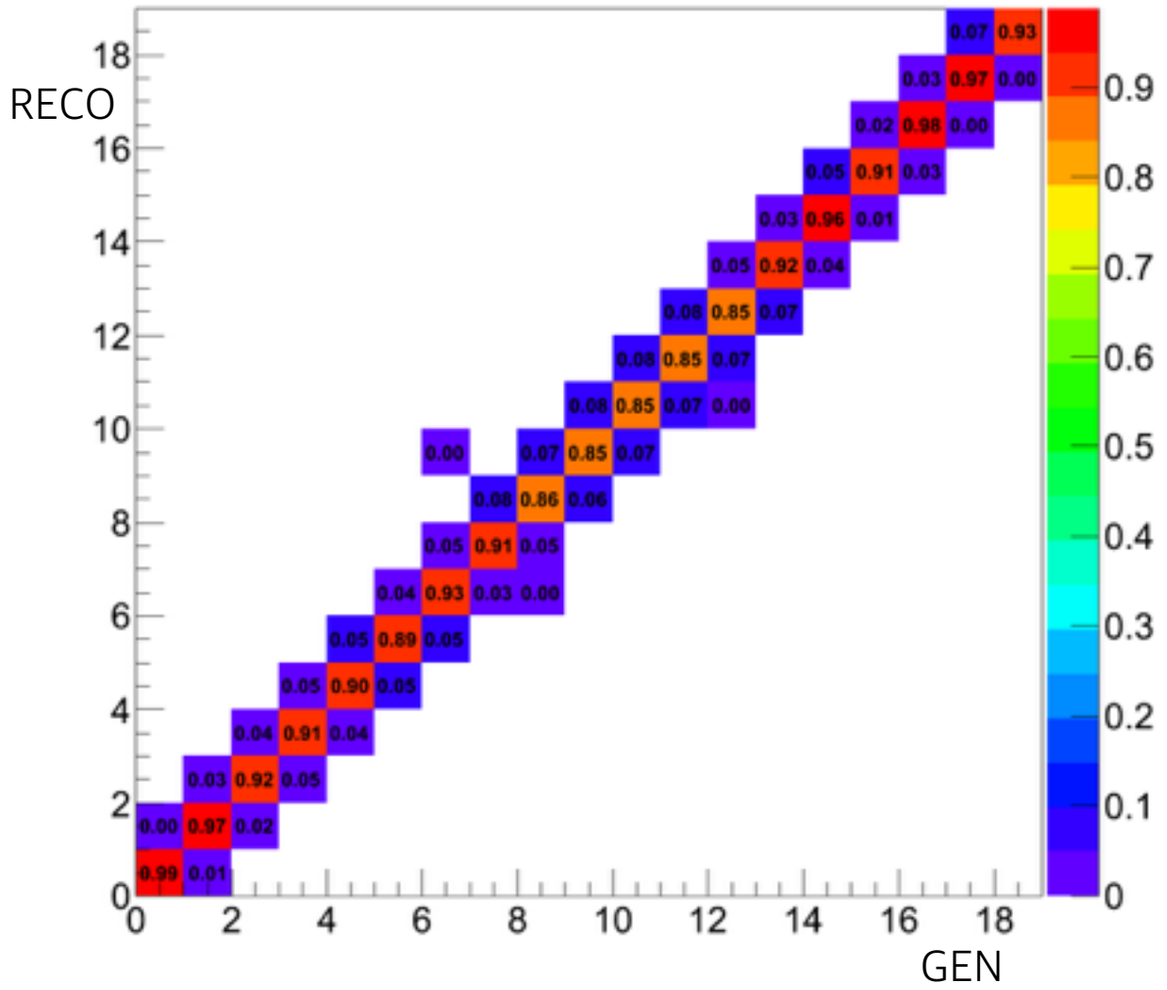
dN/dp_T



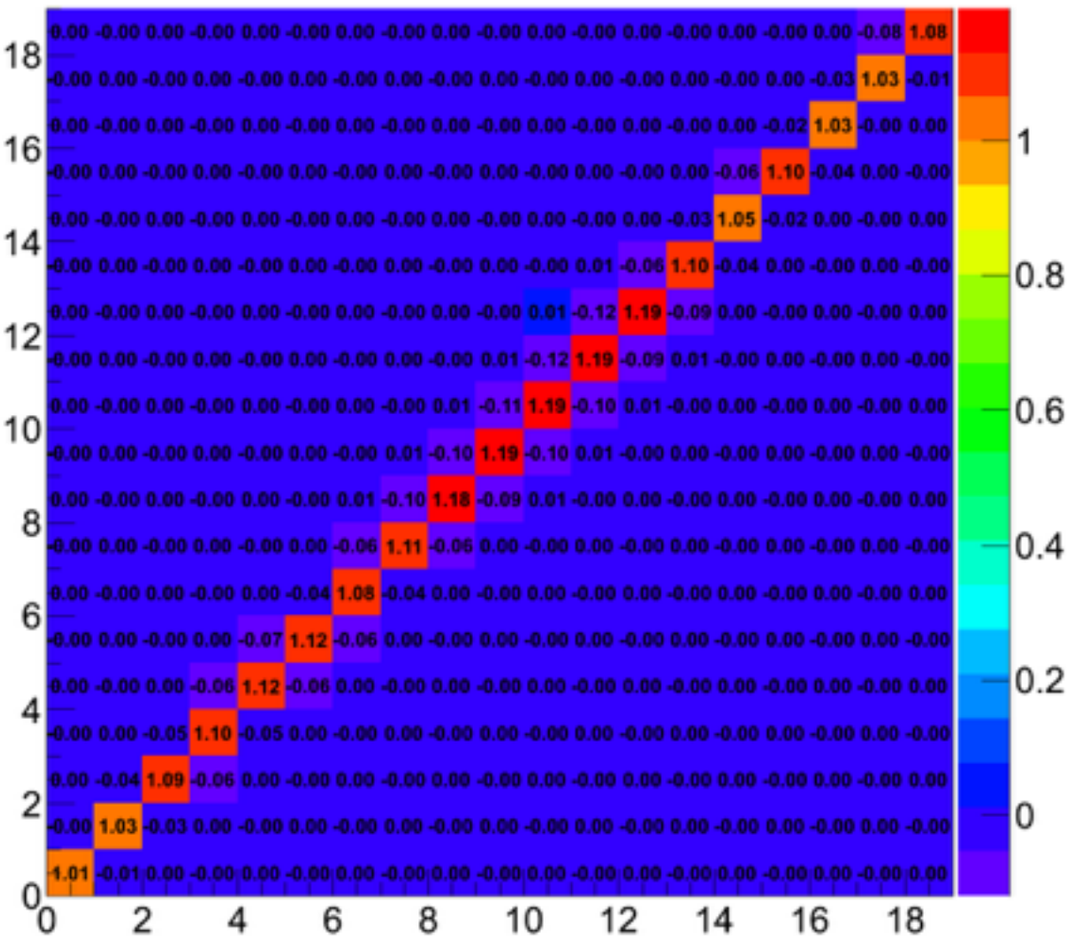
- 19 binning

- 0.0, 1.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.8, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10.0, 12.5, 14.0, 22.0, 30.0, 35.0

matrix

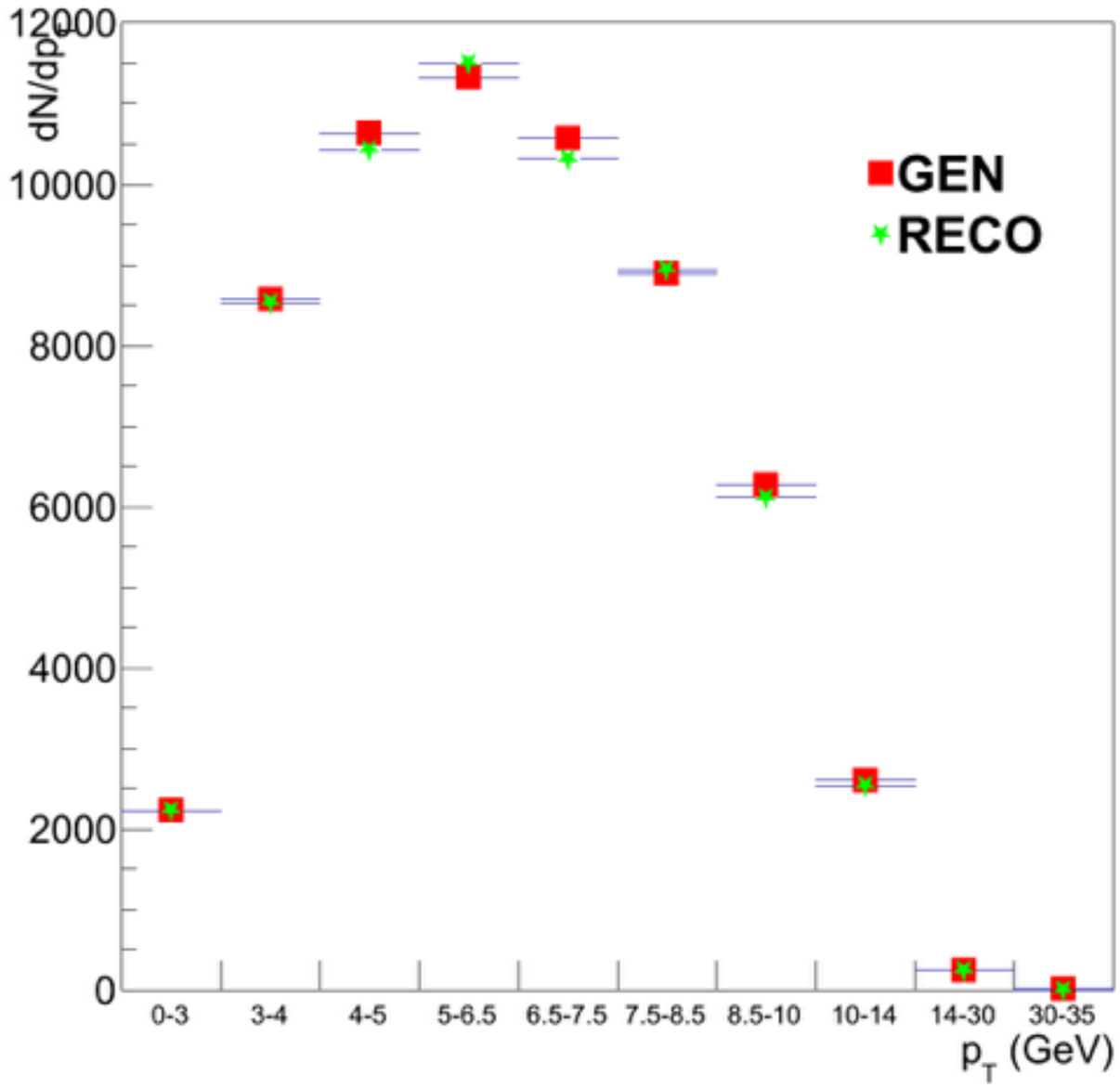


Inverse



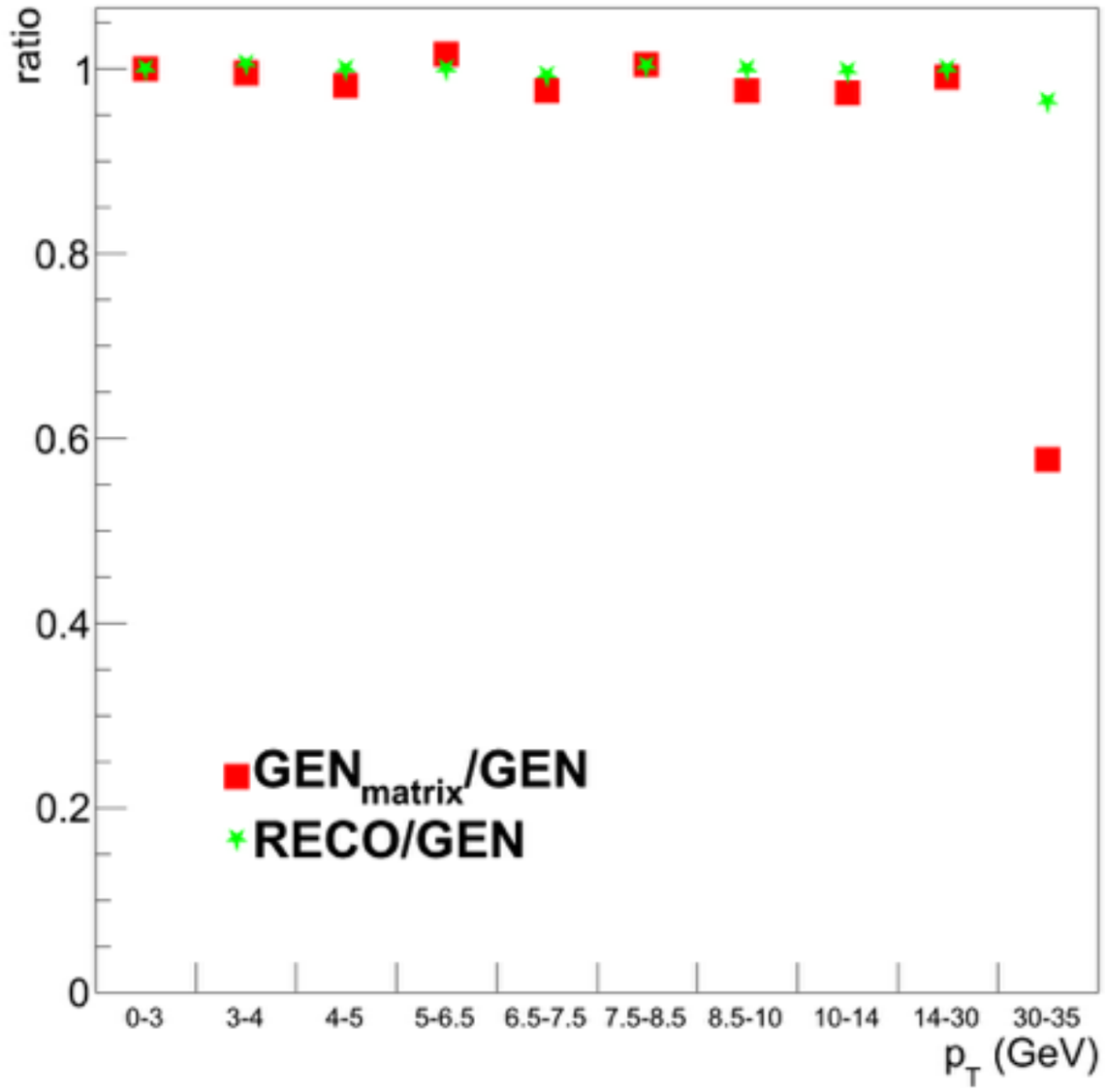
- matrix is rate of distribution of RECO pt from GEN
- $M \times GEN = RECO \rightarrow M^{-1} \times RECO = GEN$

GEN_{Matrix} vs. GEN



- GEN calculated from matrix inversion is almost similar to GEN itself
- re binned with analysis binning

ratio



- last bin of using matrix is about 0.5
- it seems because matrix does not contain higher pt component

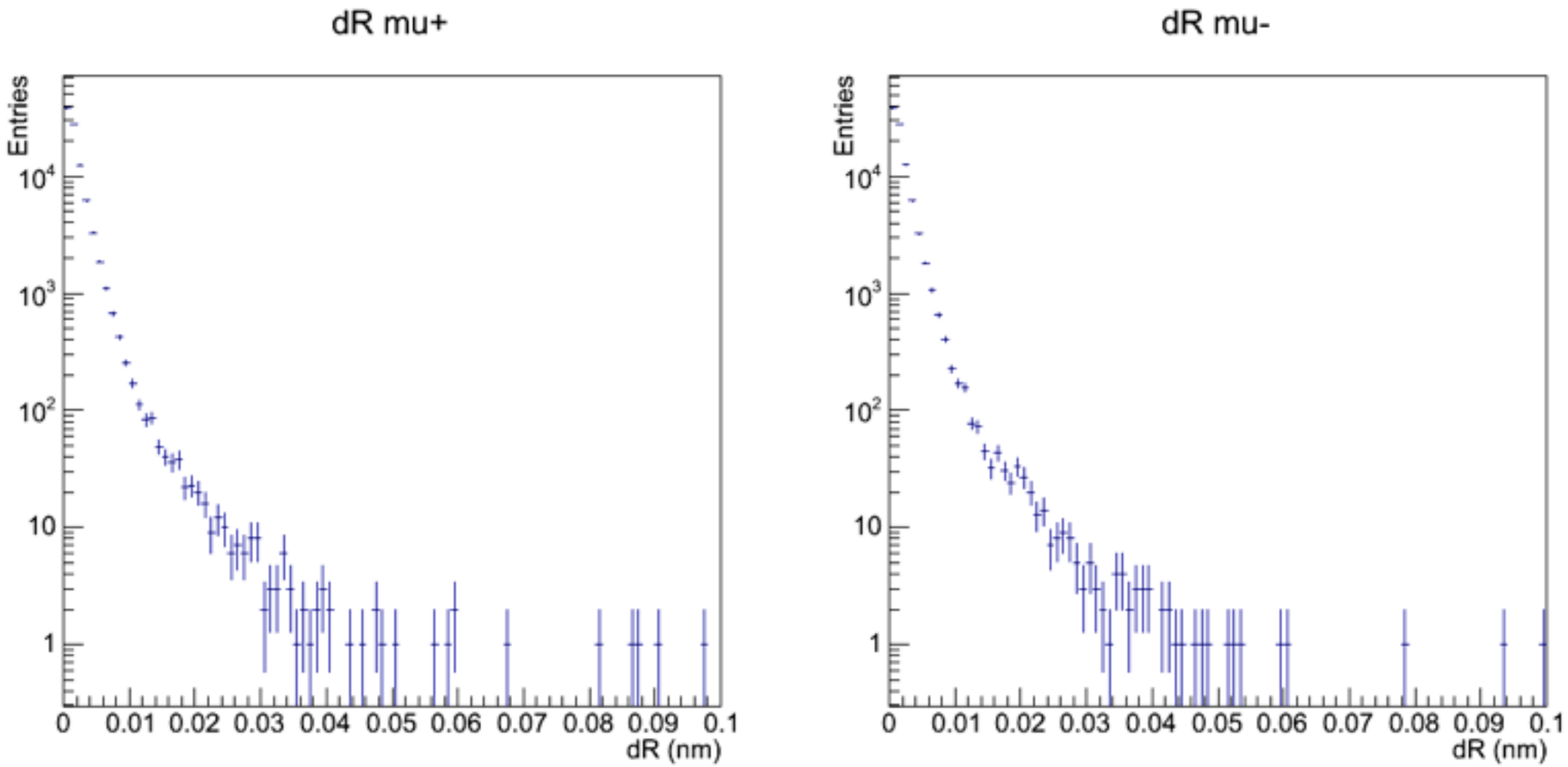
back up

kinematic cut and soft muon ID cut

- kinematic cut
- |eta| < 1.3 : pt >= 3.3
- 1.3 <= |eta| < 2.2 : p >= 2.9
- 2.2 <= |eta| < 2.4 : pt >= 0.8

- soft muon ID cut
- TrackerMuonArbitrated
- TMOneStationTight
- trackerLayersWithMeasurement >5
- normalizedChi2 < 1.8
- pixelLayersWithMeasurement > 0
- dxy < 3
- dz < 20

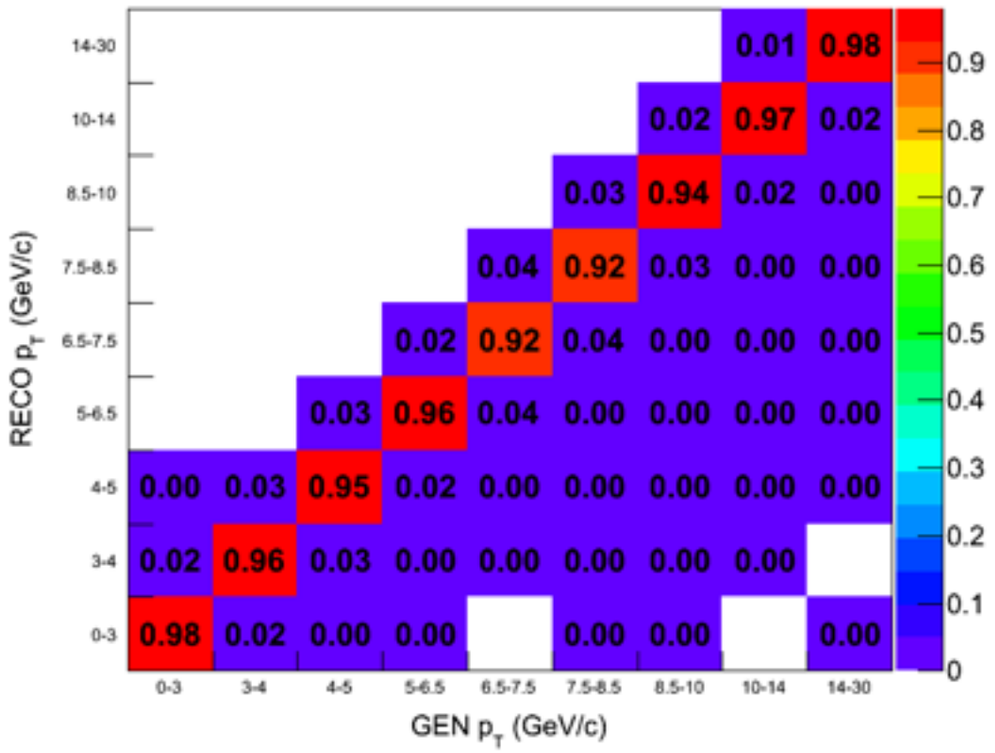
dR



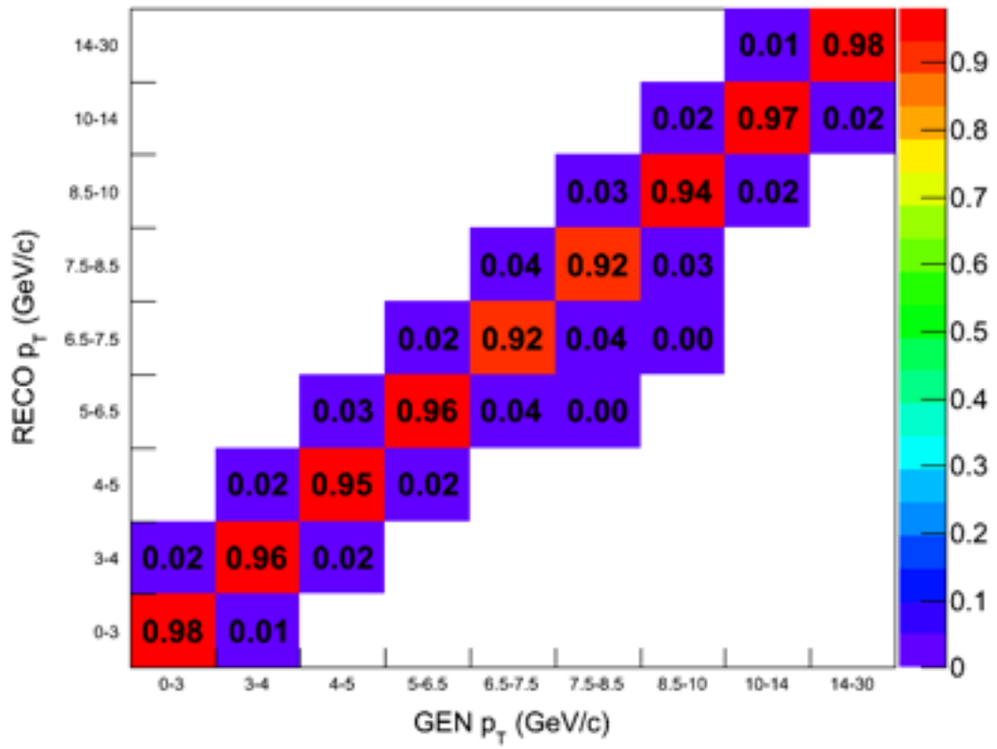
- distance between Reco and Gen muon
- muons satisfy cut of previous slide

dR dependence

w/o dR

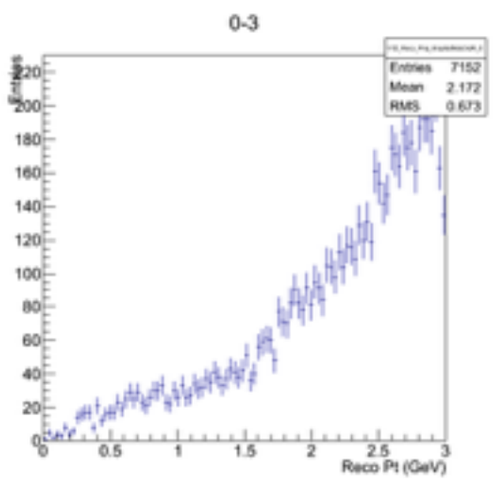


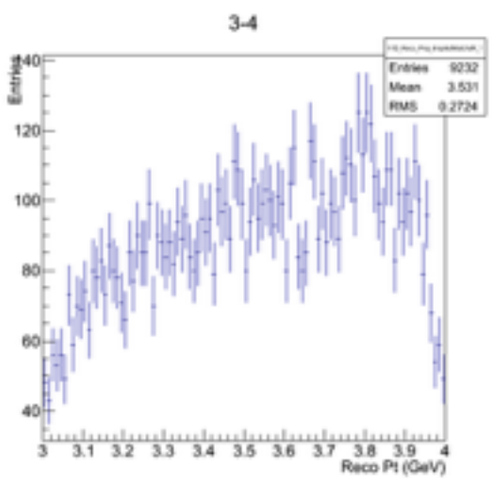
w/ dR

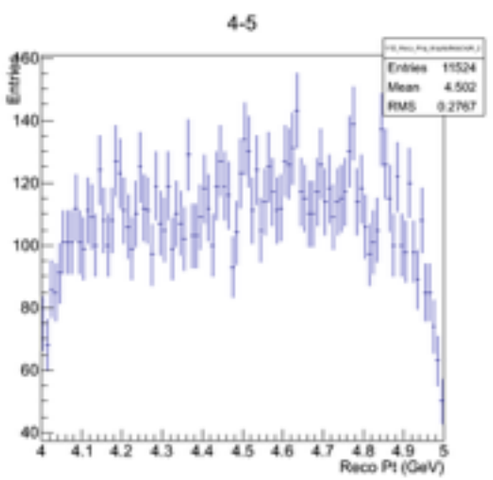


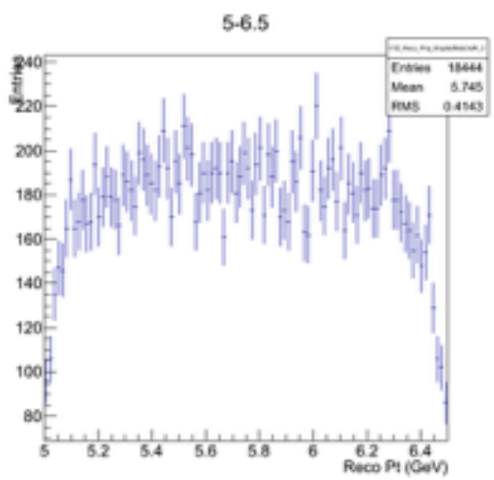
- dR < 0.2
- dR cut reduce off-diagonal turms

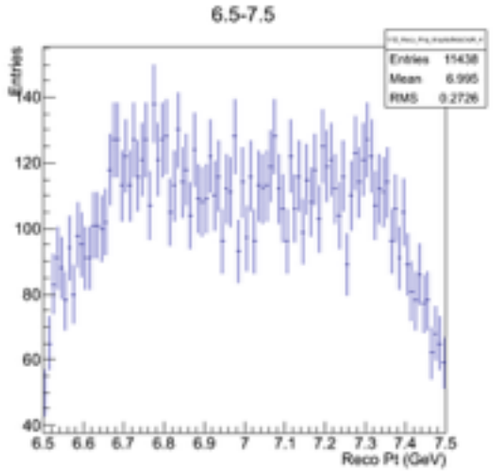
pt distribution

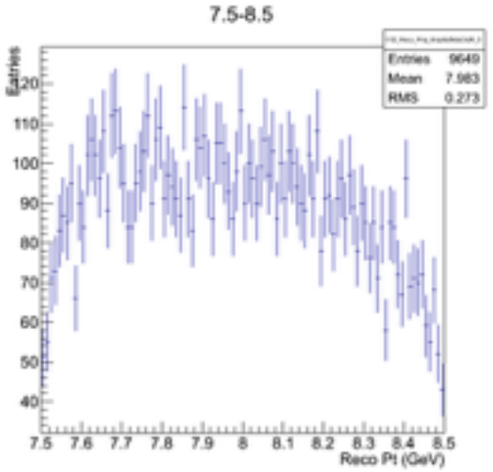


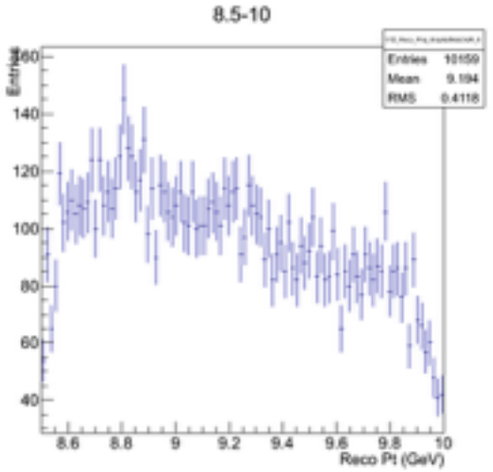


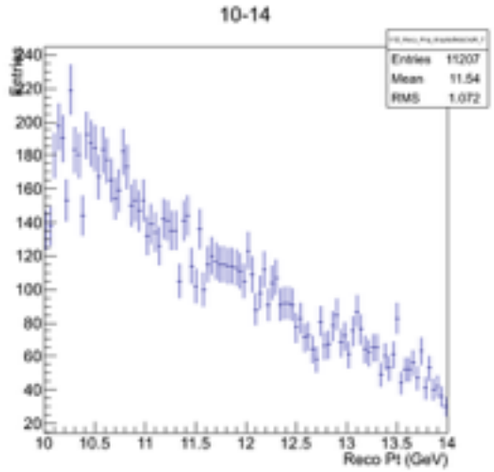


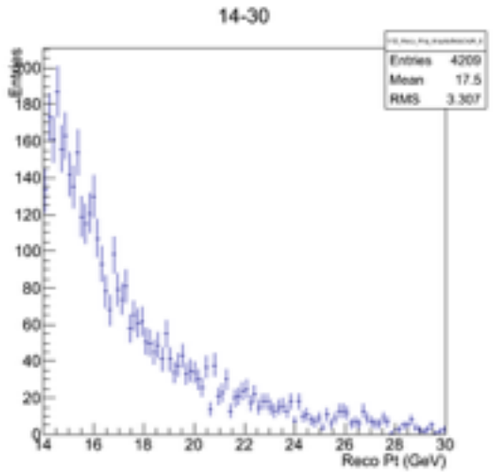












- If both gen-reco Jpsi are satisfy conditions in slide2, reco pt of Jpsi drawn for gen pt Jpsi
- they are not gaussian because reco Jpsi pt distribution is not collection of pt gaussian