Quantification of Accidentals and Other Beam Studies

****All Data Presented here represents 1/3 of my total data set, after all pK+K-gg selection cuts. This does NOT include Qvalue weights***

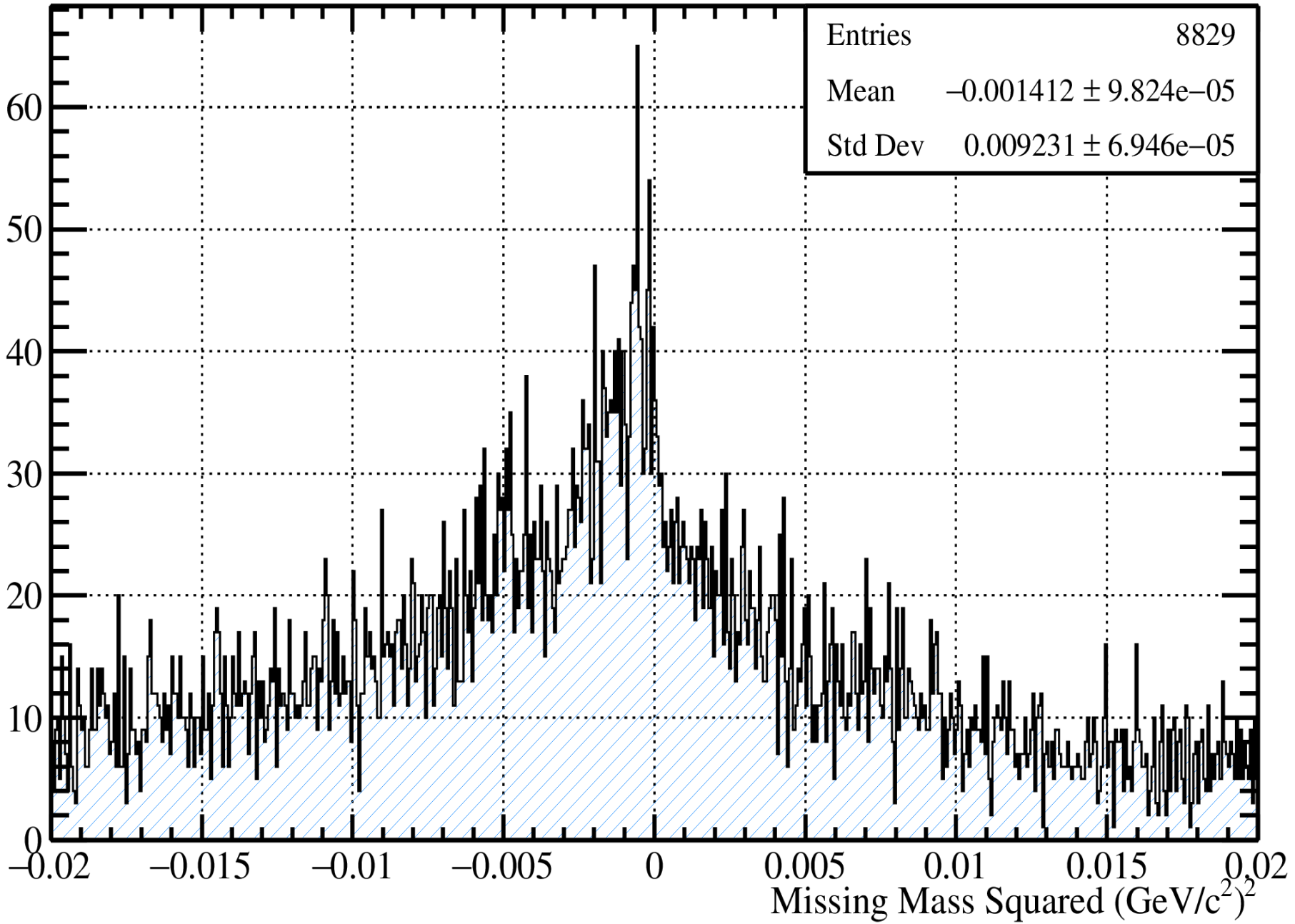
- First we will look at an overview of all data
  - Missing Mass Squared
  - Beam Energy
  - Number of Particles/Combinations
  - Beam DeltaT, Quantification of Accidentals

- Then we will look at the ‘best’ beam photon, ie- the combination that had the missing mass squared closest to zero

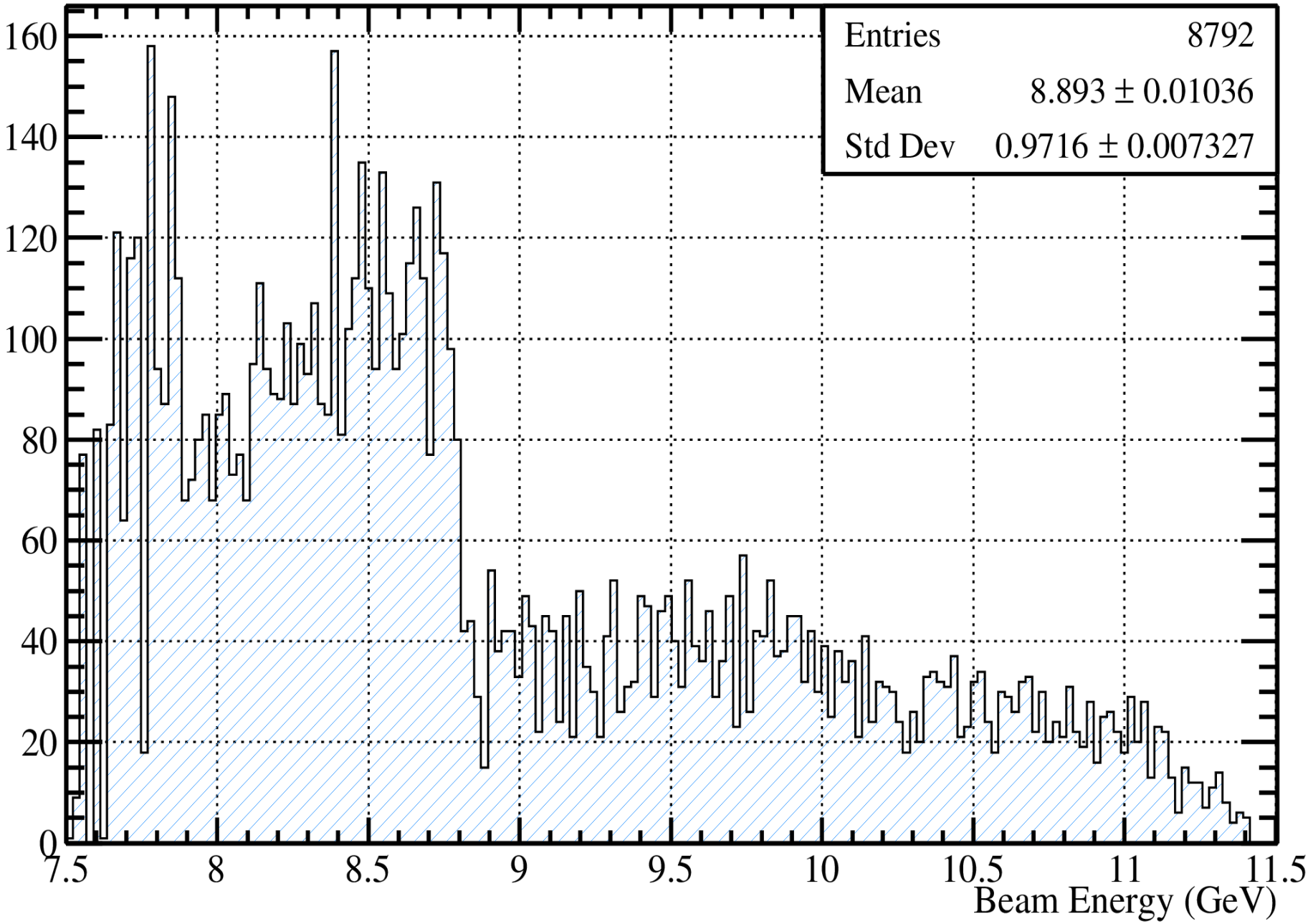
- Then we will look at the ‘other’ beam photons, ie- the combinations that did not have the missing mass squared closest to zero

- Then we will look at the ‘difference’ between the distributions of the ‘best’ beam photon and the ‘other’ beam photons

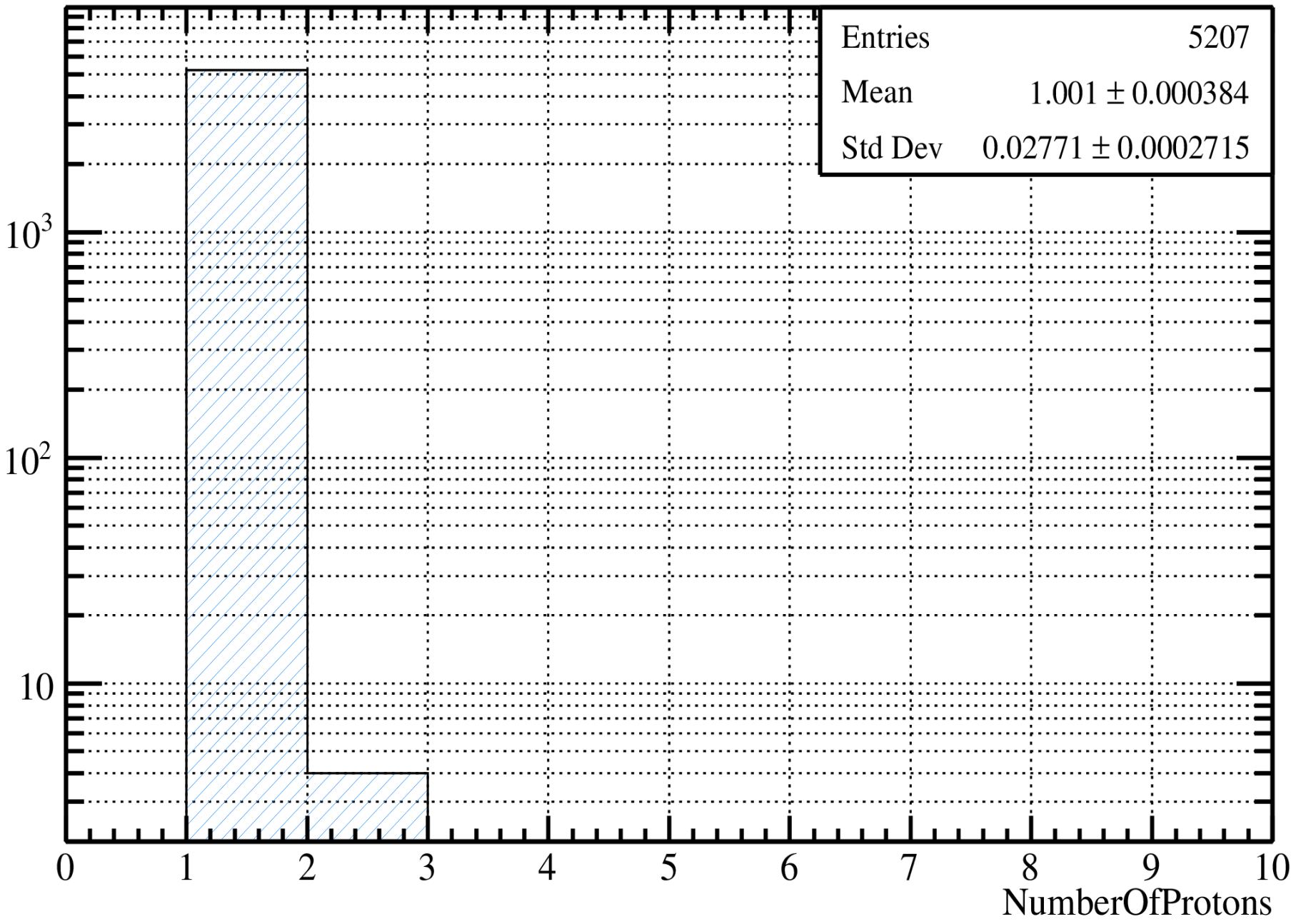
Missing Mass Squared, All Data



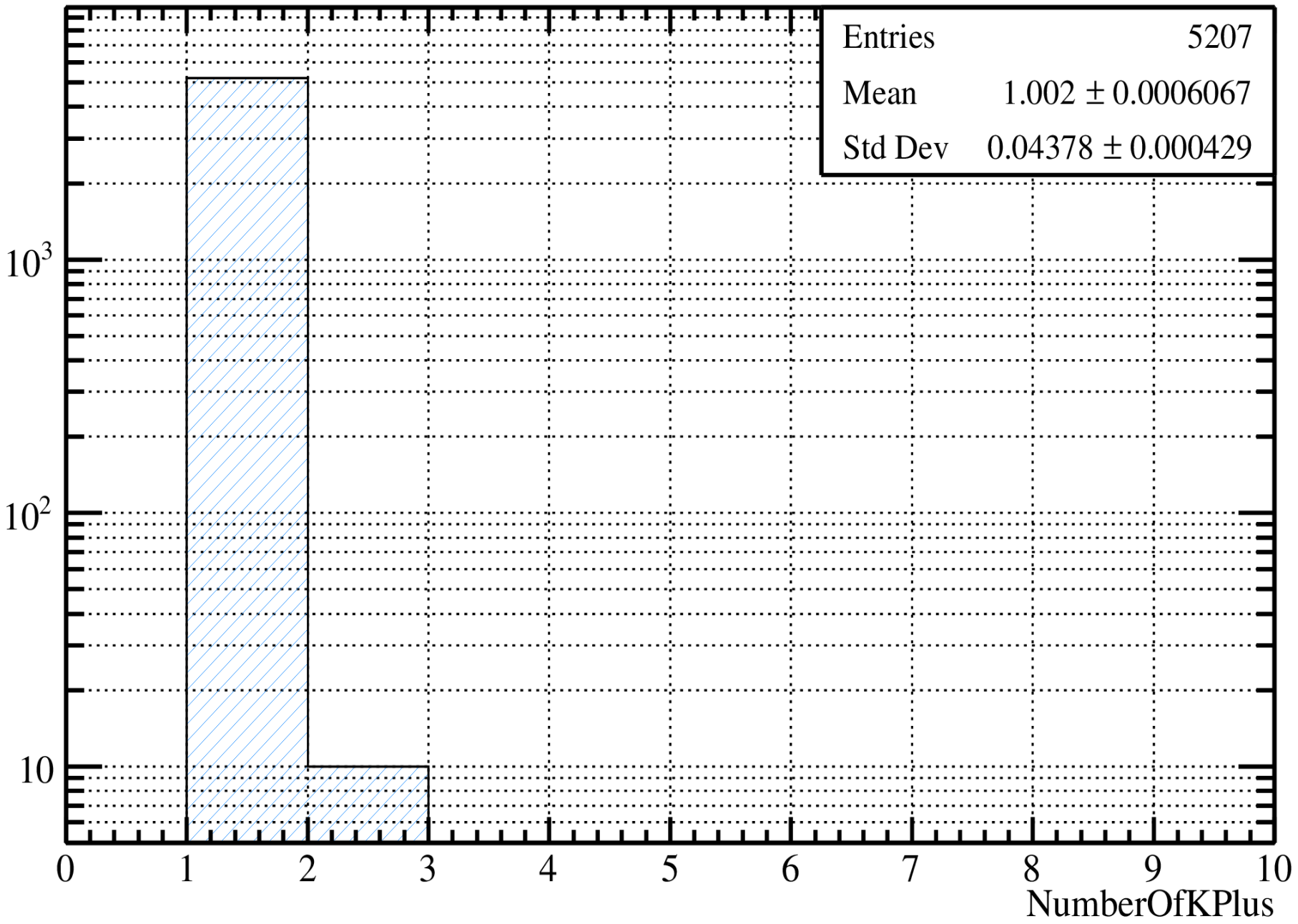
Beam Energy, All Data



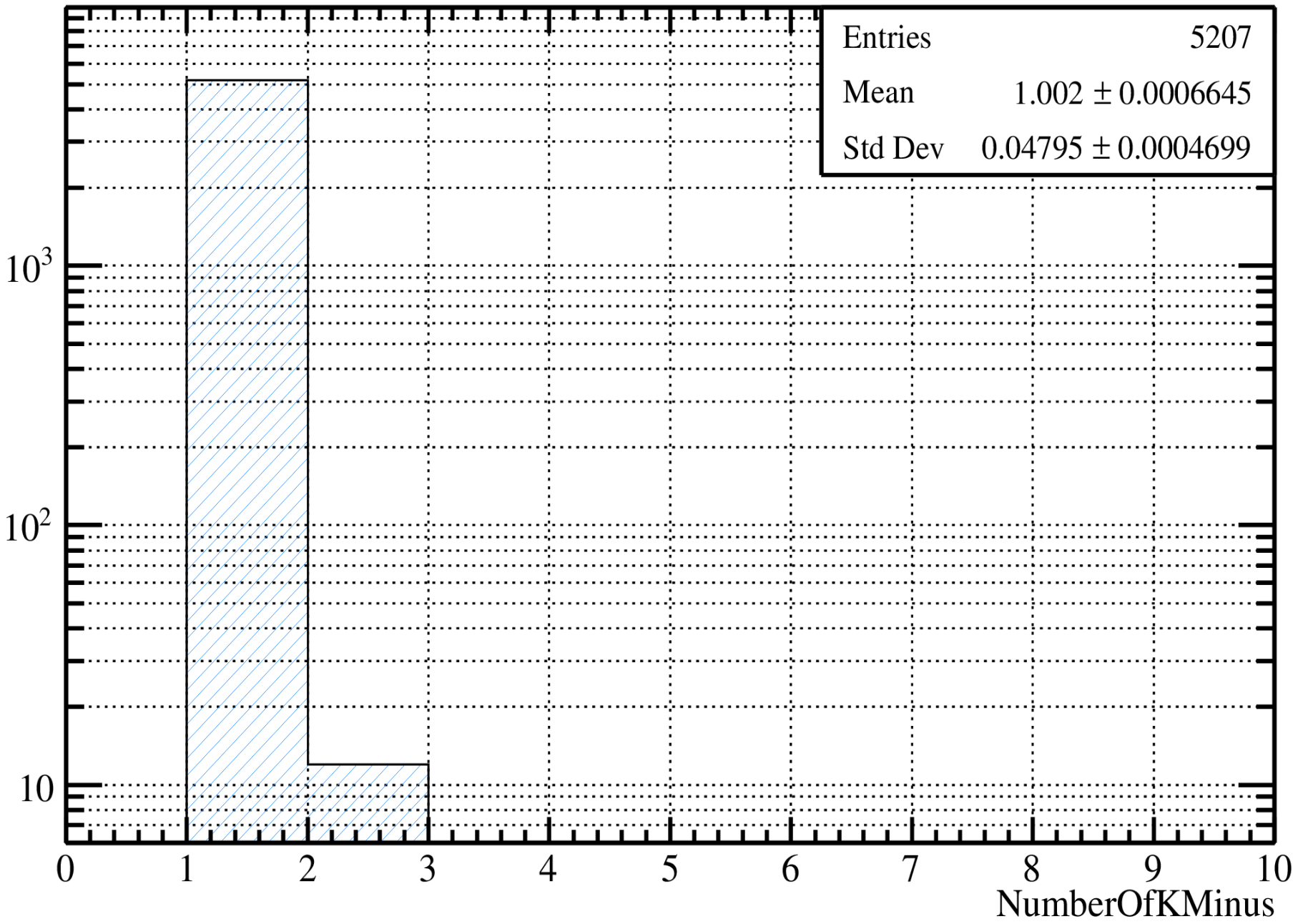
Number of Protons, All Data



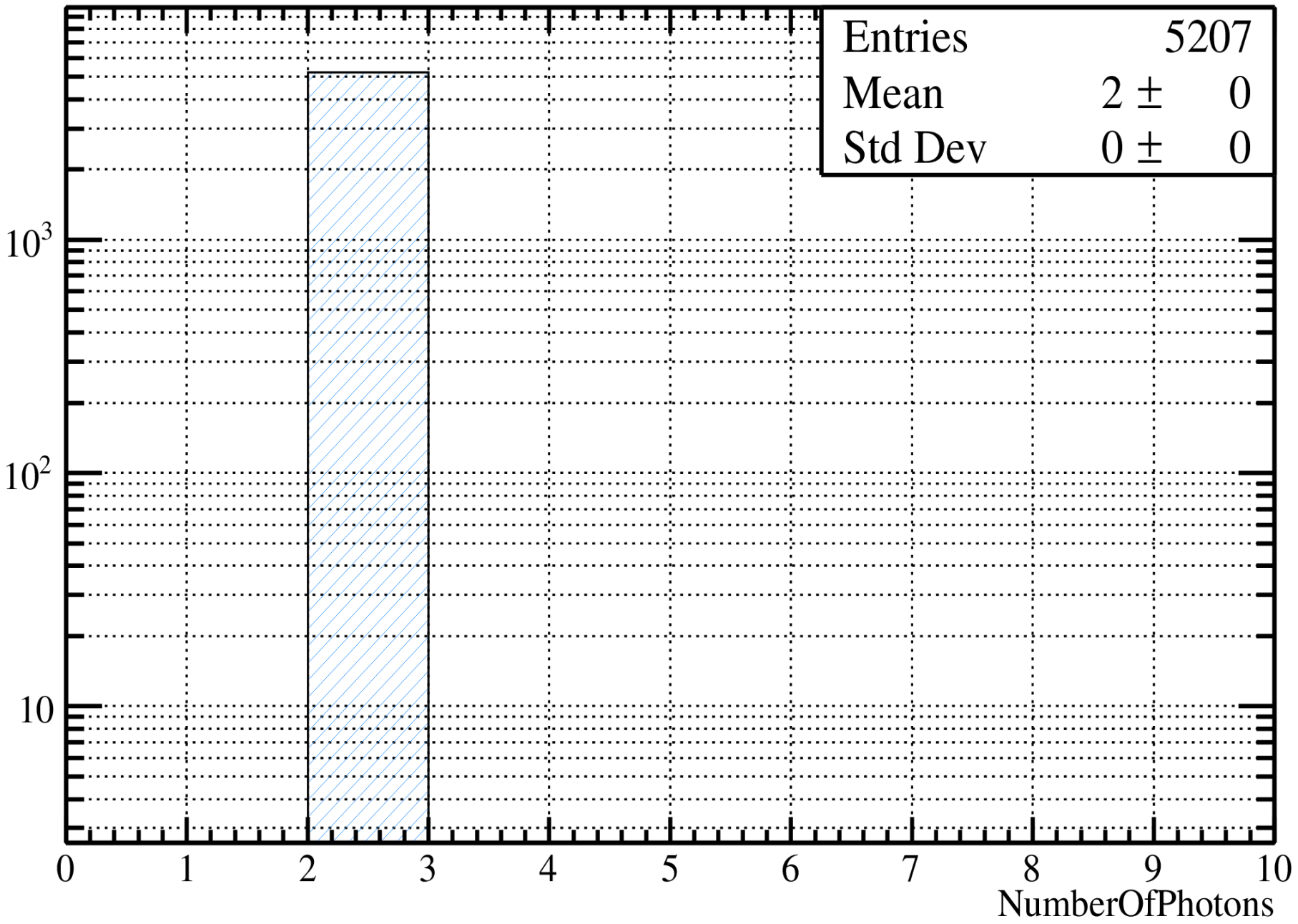
Number of K+, All Data



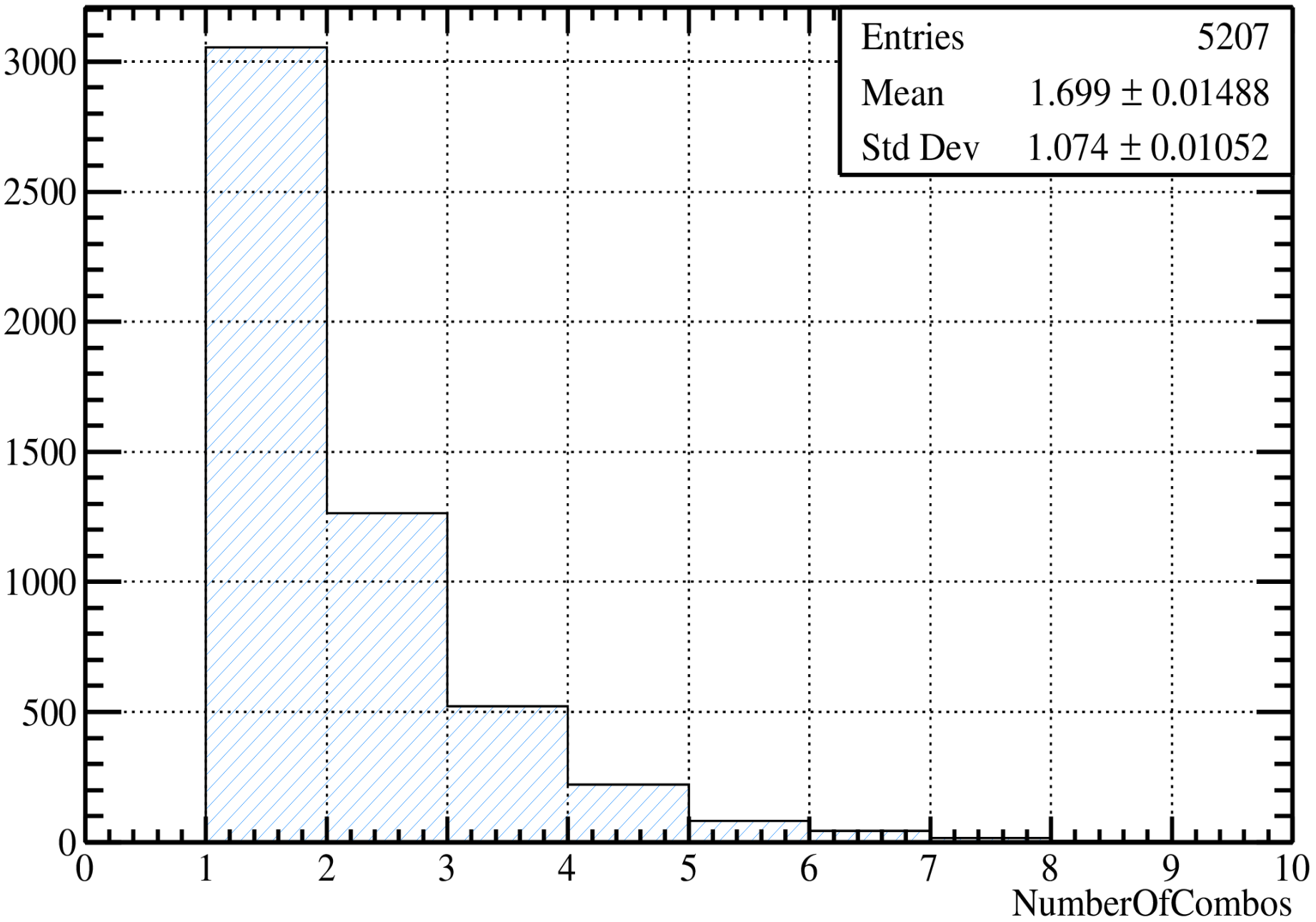
Number of K-, All Data



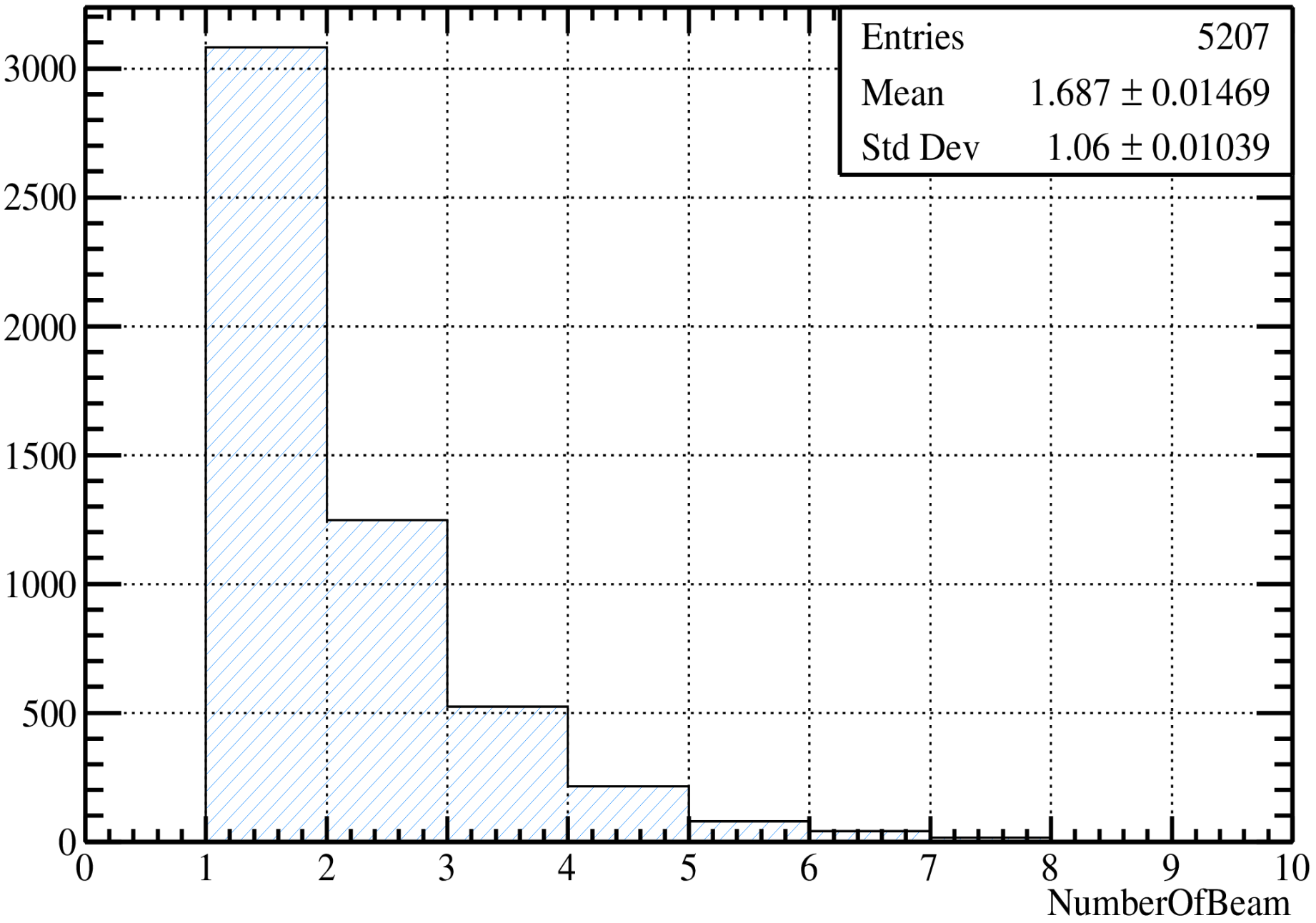
Number of Photons, All Data



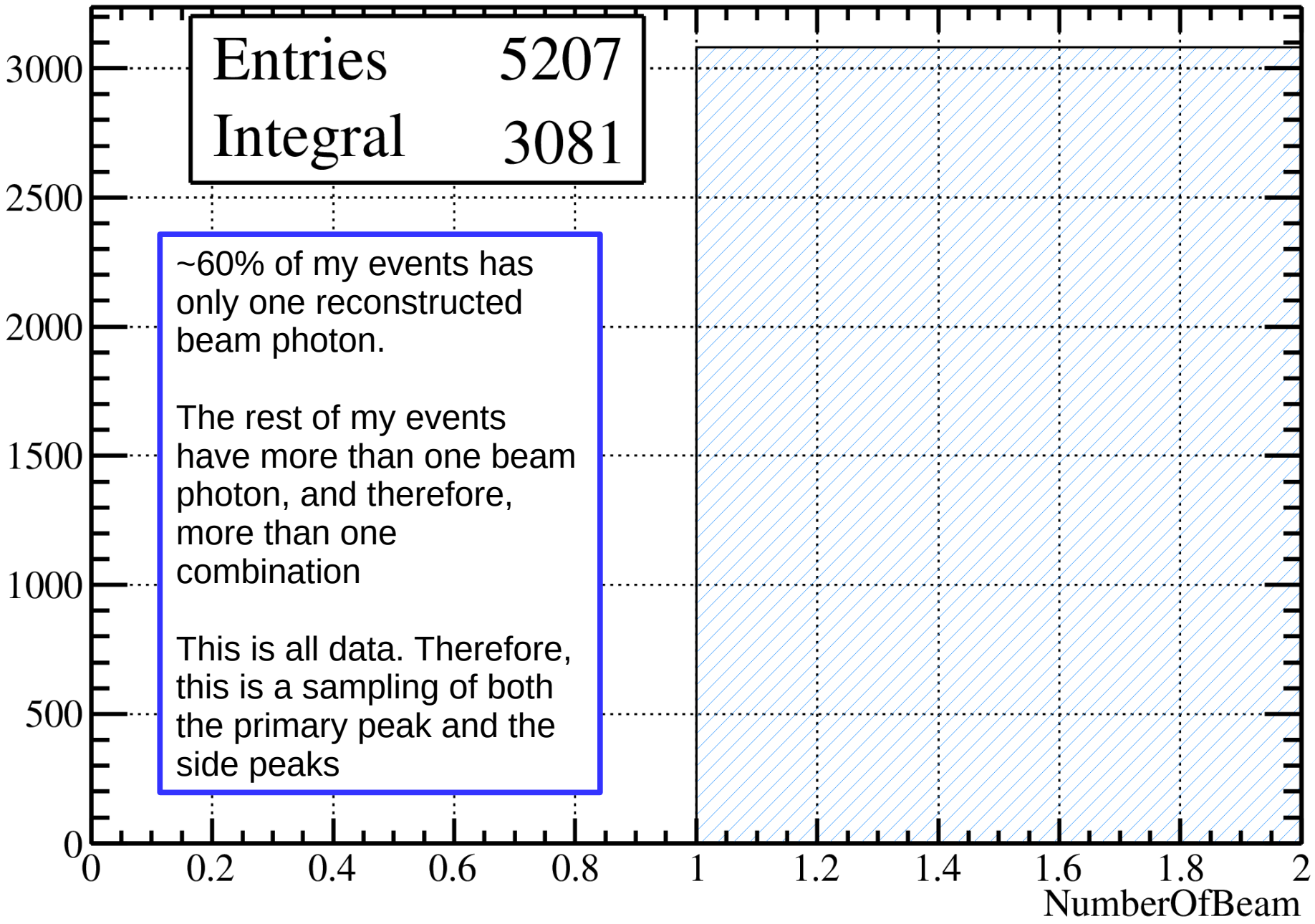
Number of Combos, All Data



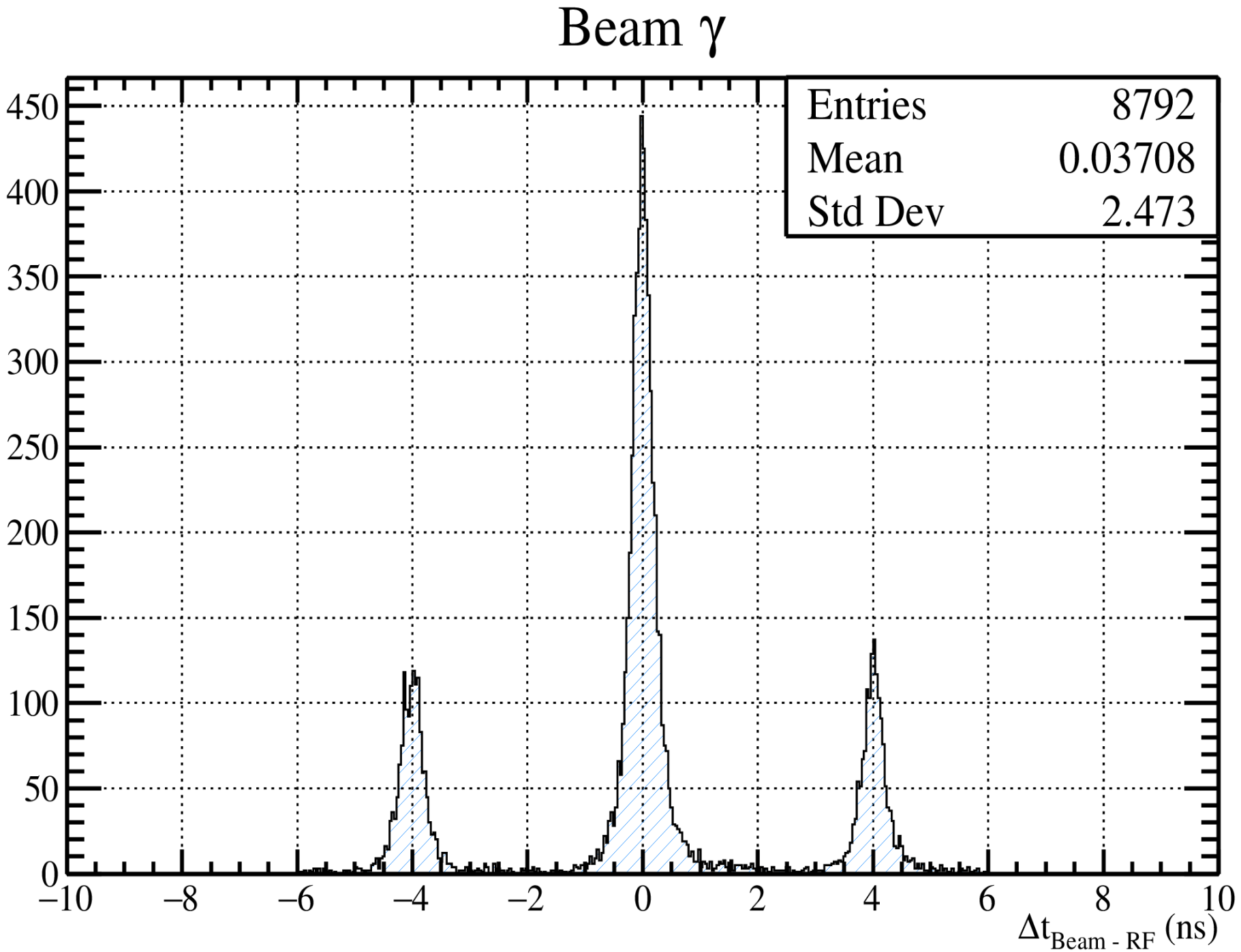
Number of Beam, All Data



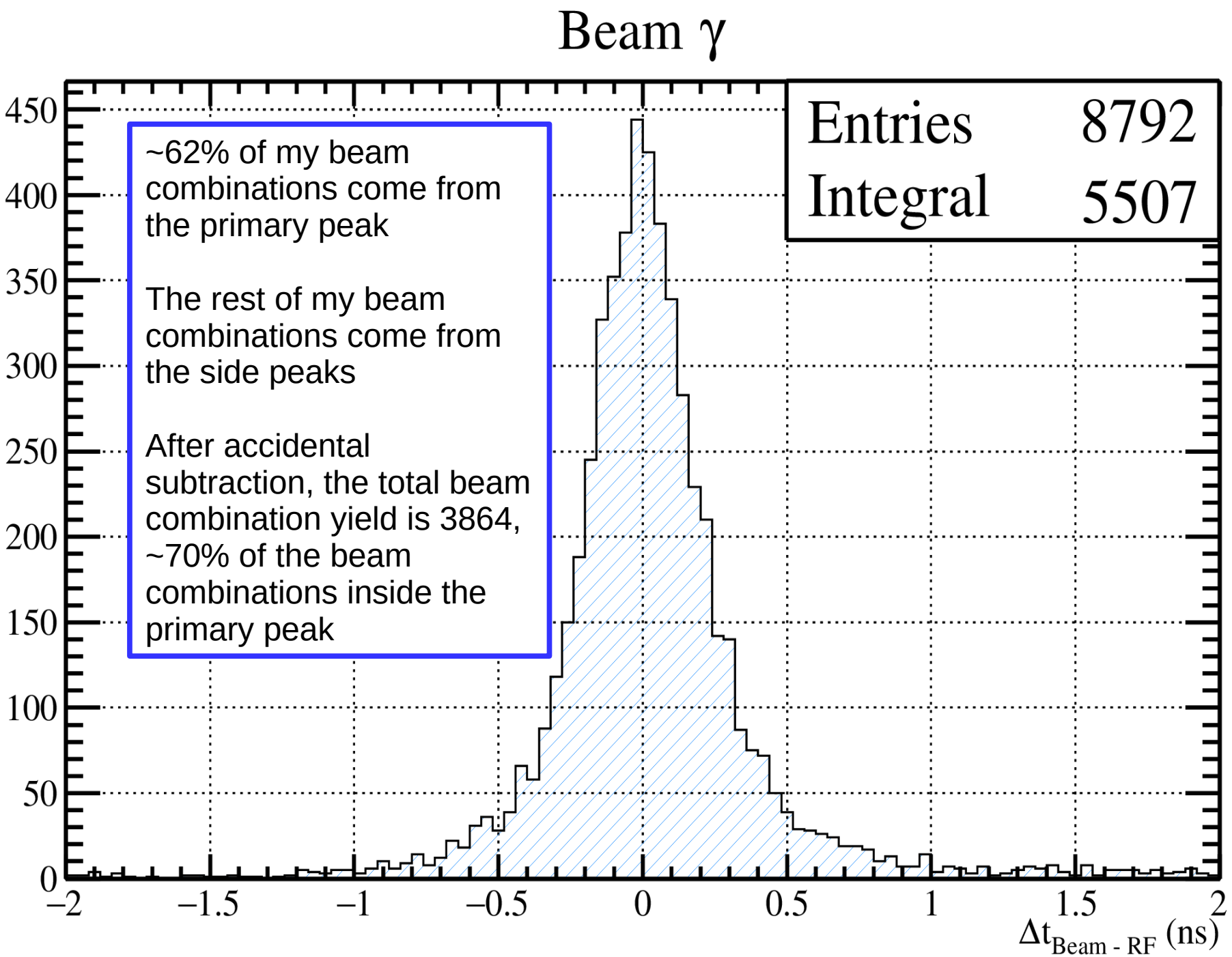
Number of Beam, All Data



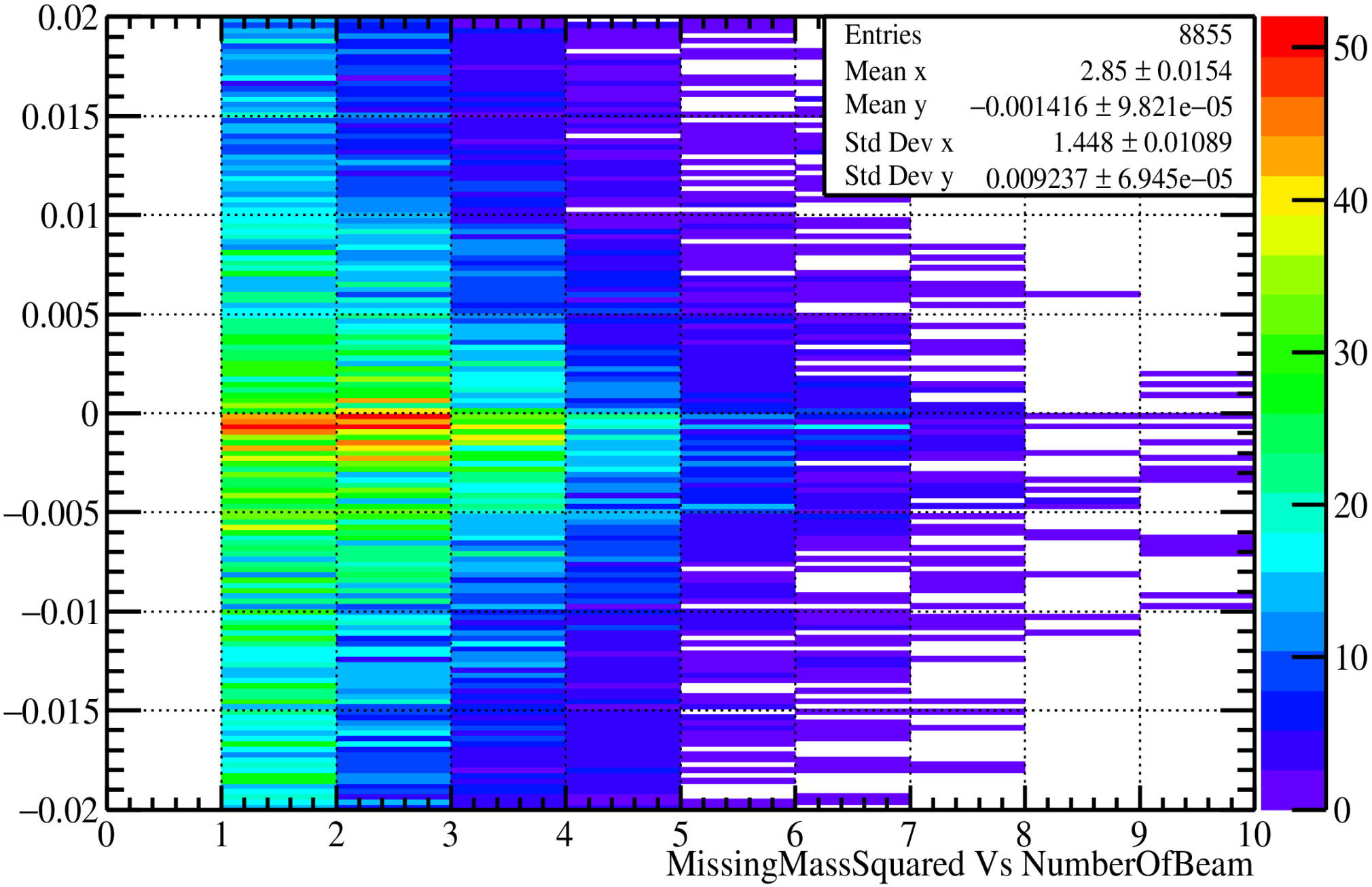
Beam DeltaT, All Data



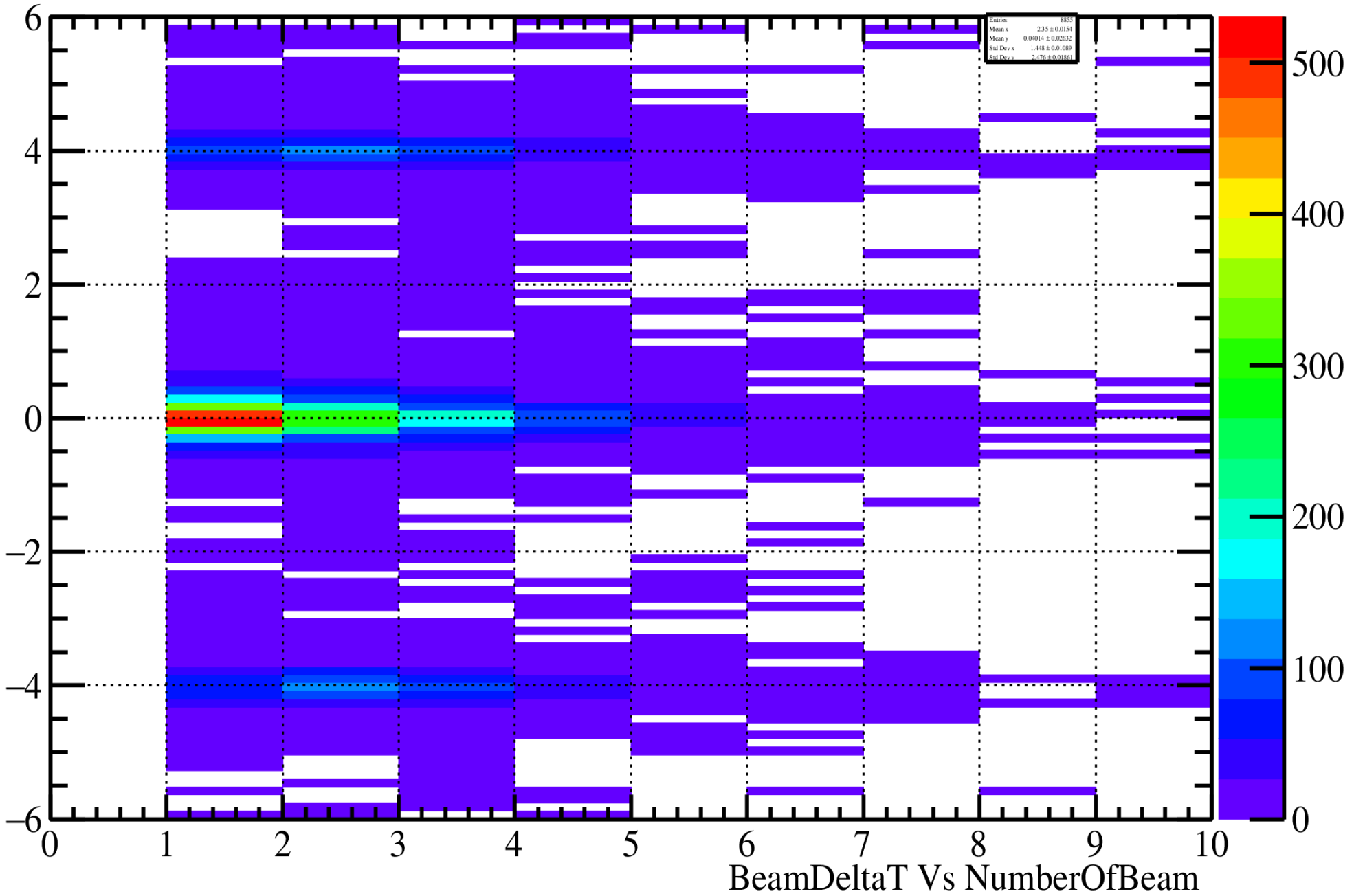
Beam DeltaT – Primary Peak, All Data



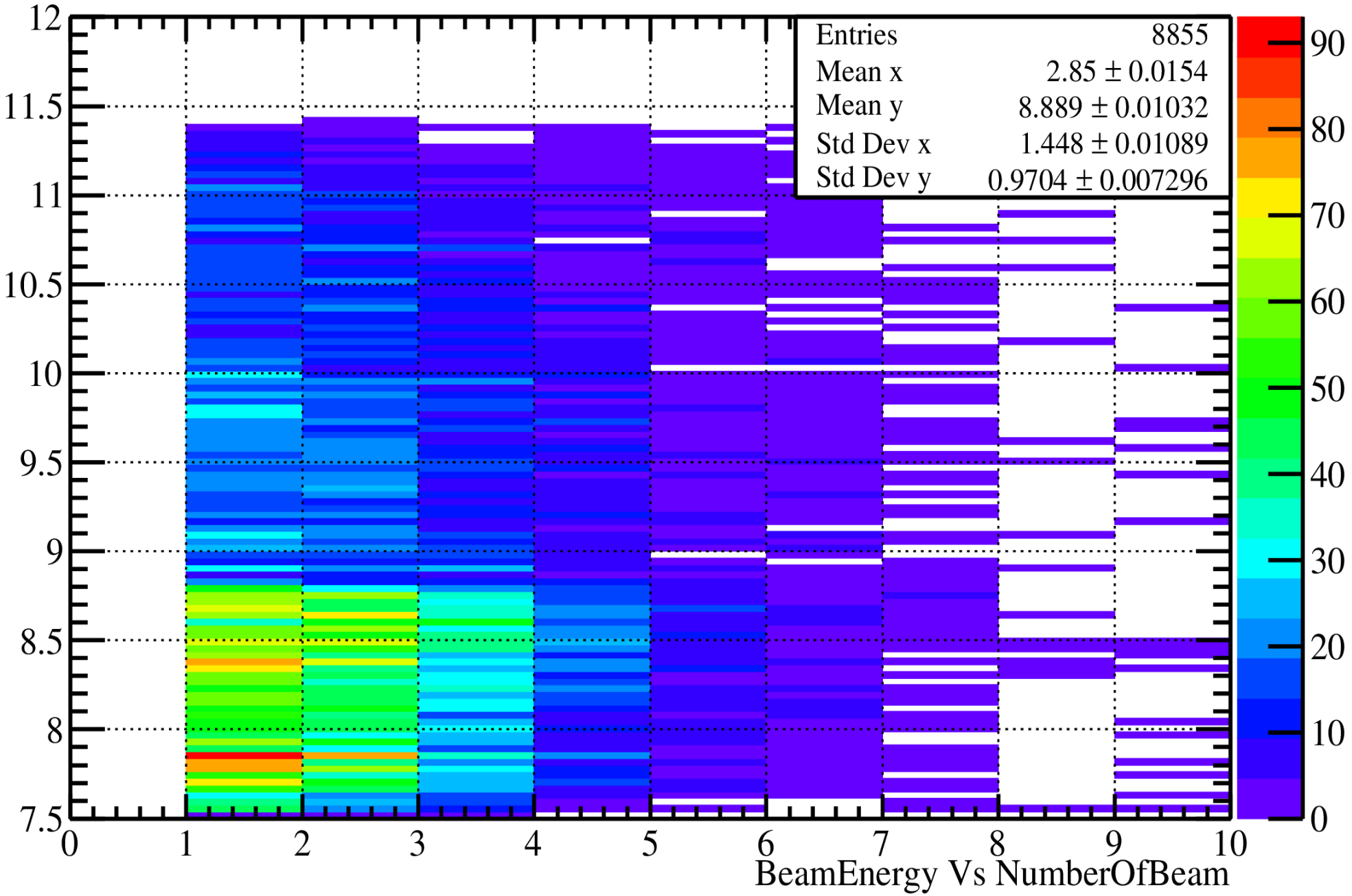
MMSQ Vs NumberOfBeam, All Data



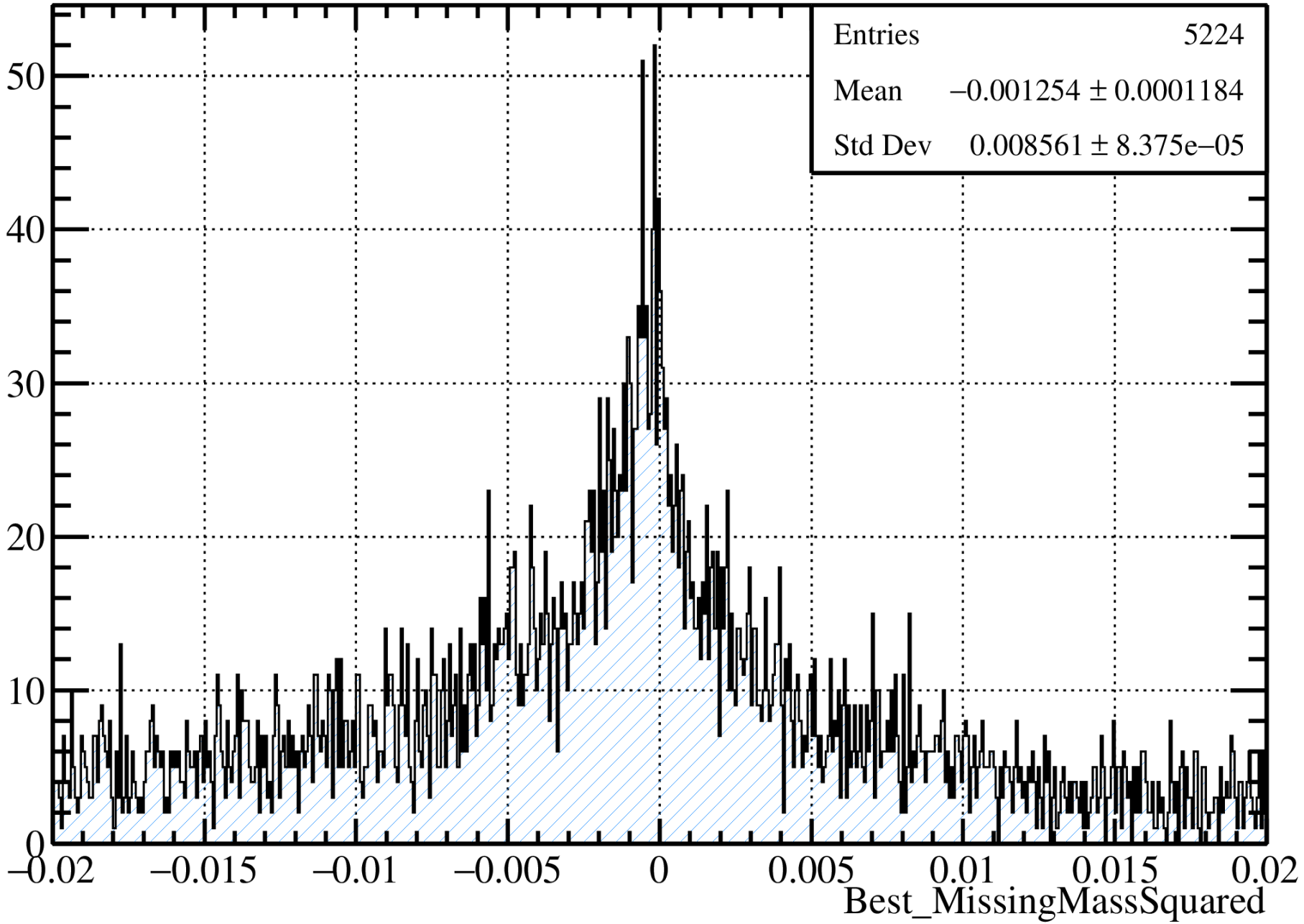
Beam DeltaT Vs #OfBeam, All Data



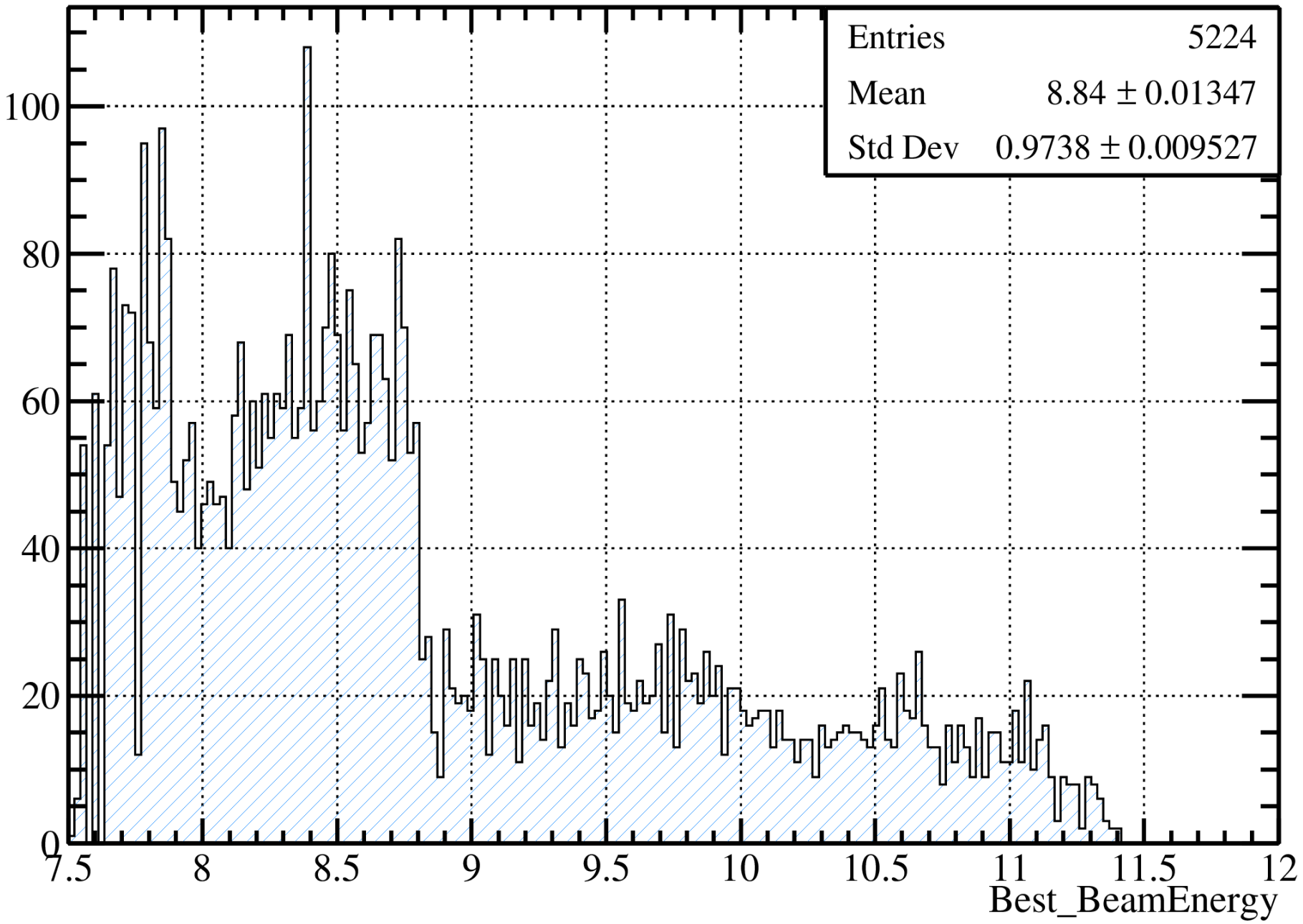
Beam Energy Vs #OfBeam, All Data



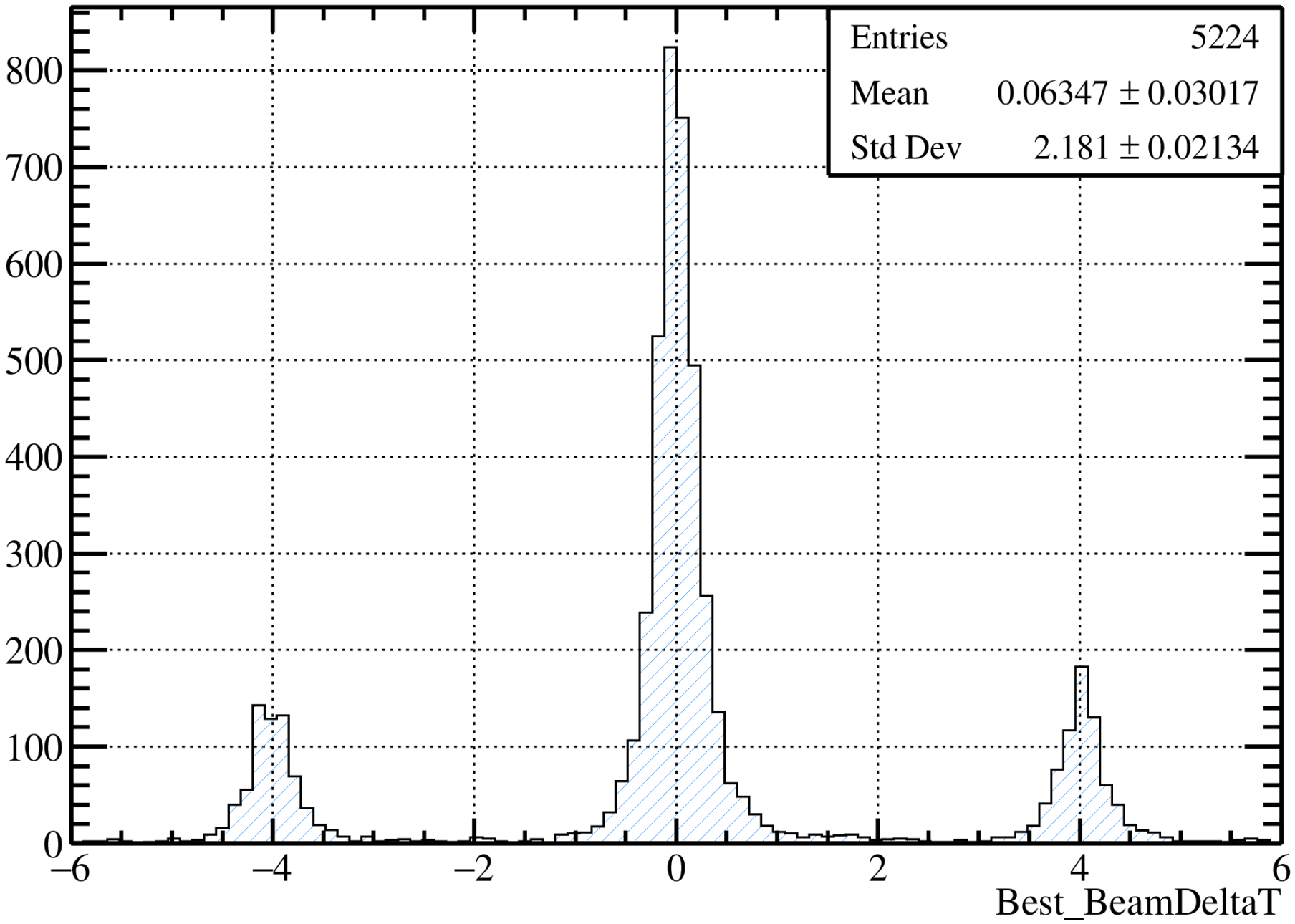
Missing Mass Squared, Best Data



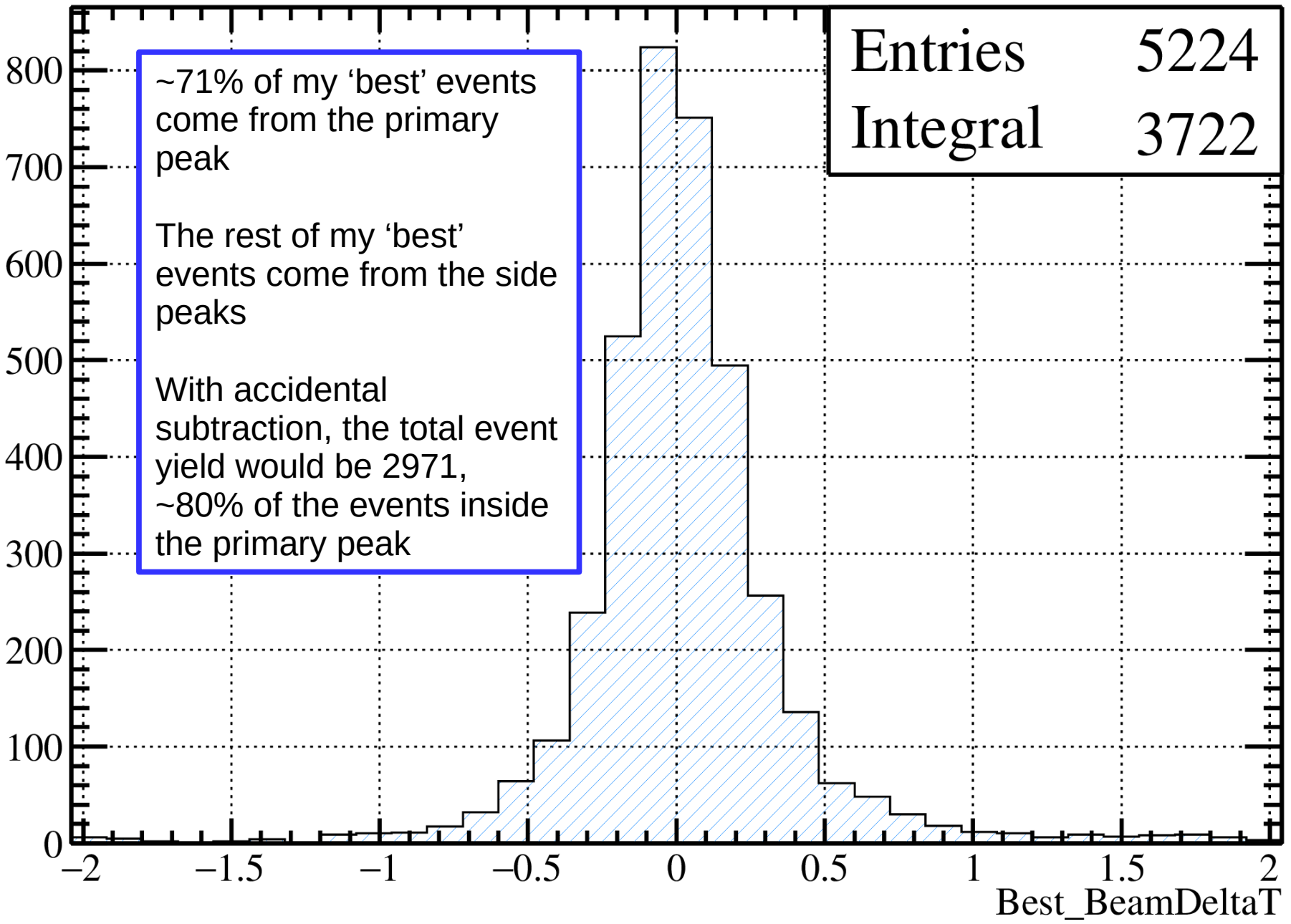
Beam Energy, Best Data



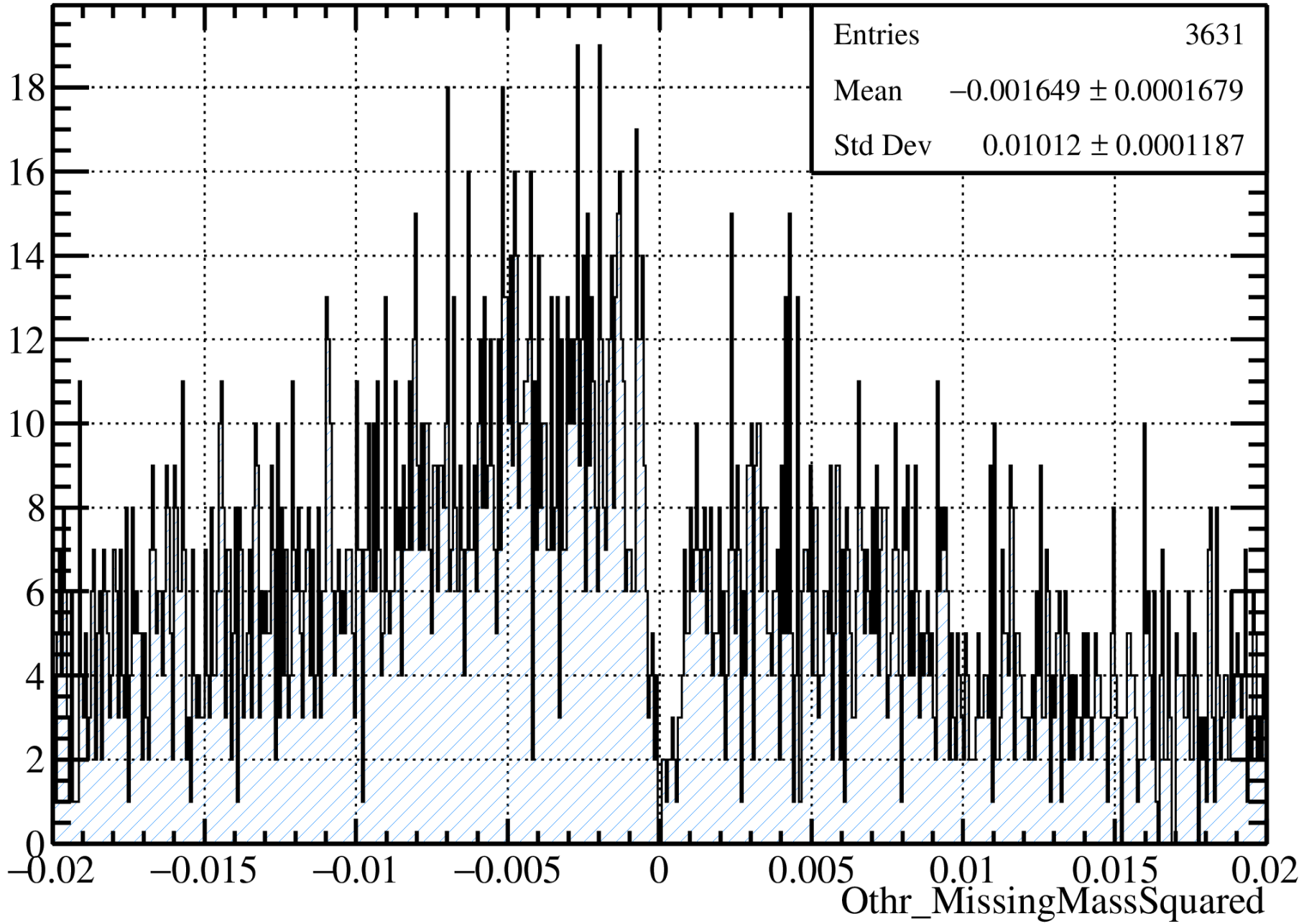
Beam DeltaT, Best Data



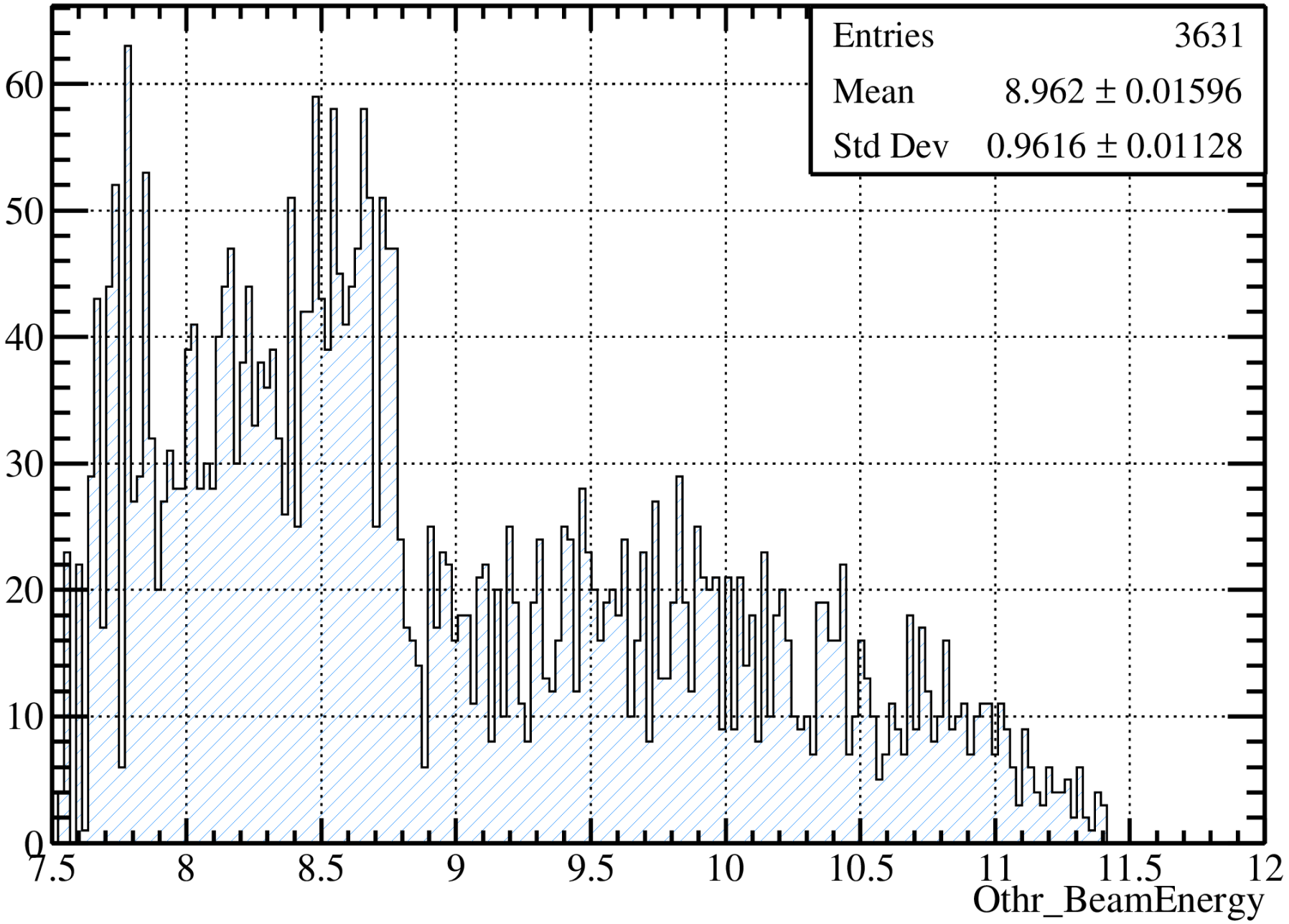
Beam DeltaT – Primary Peak, Best Data



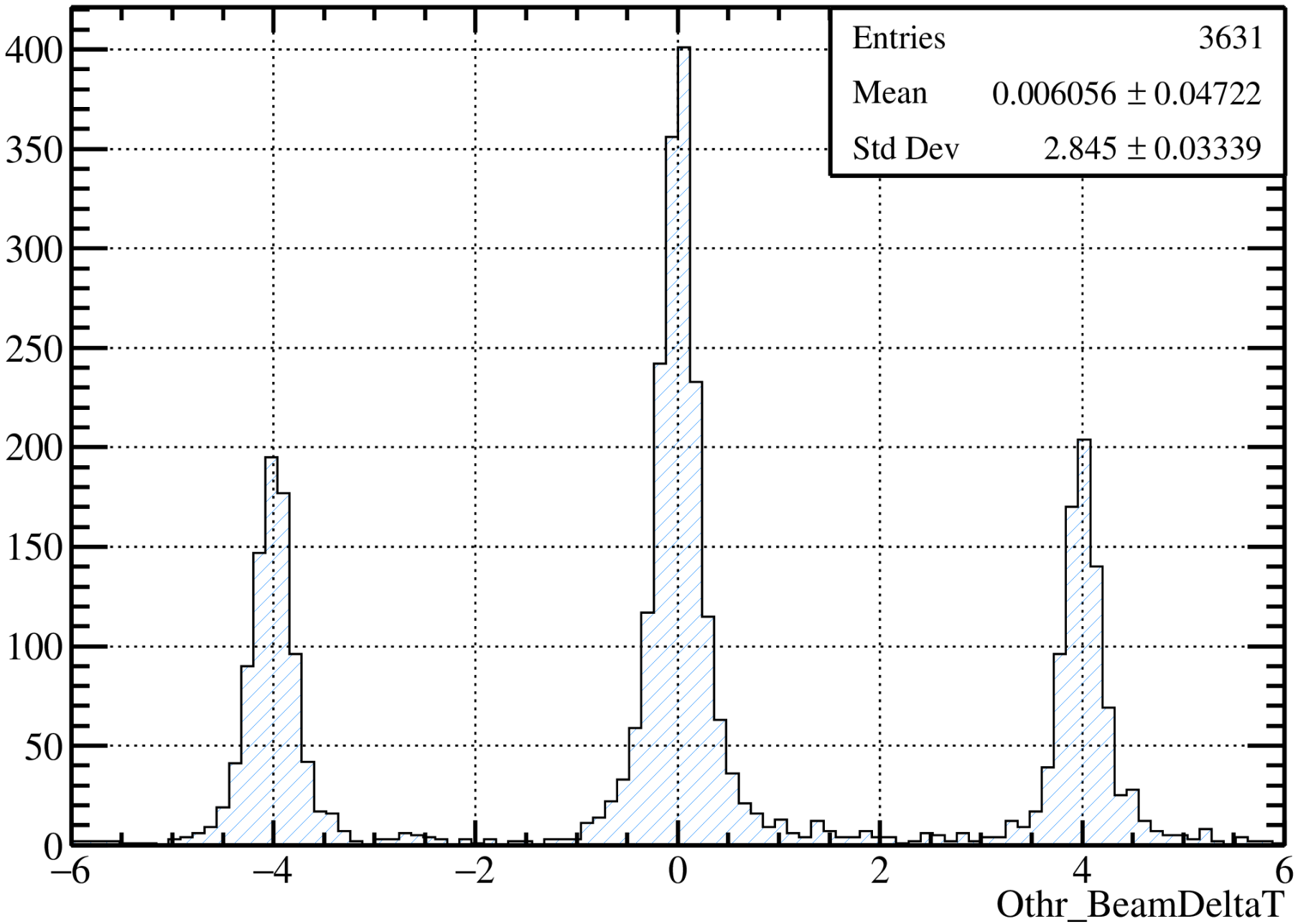
Missing Mass Squared, Other Data



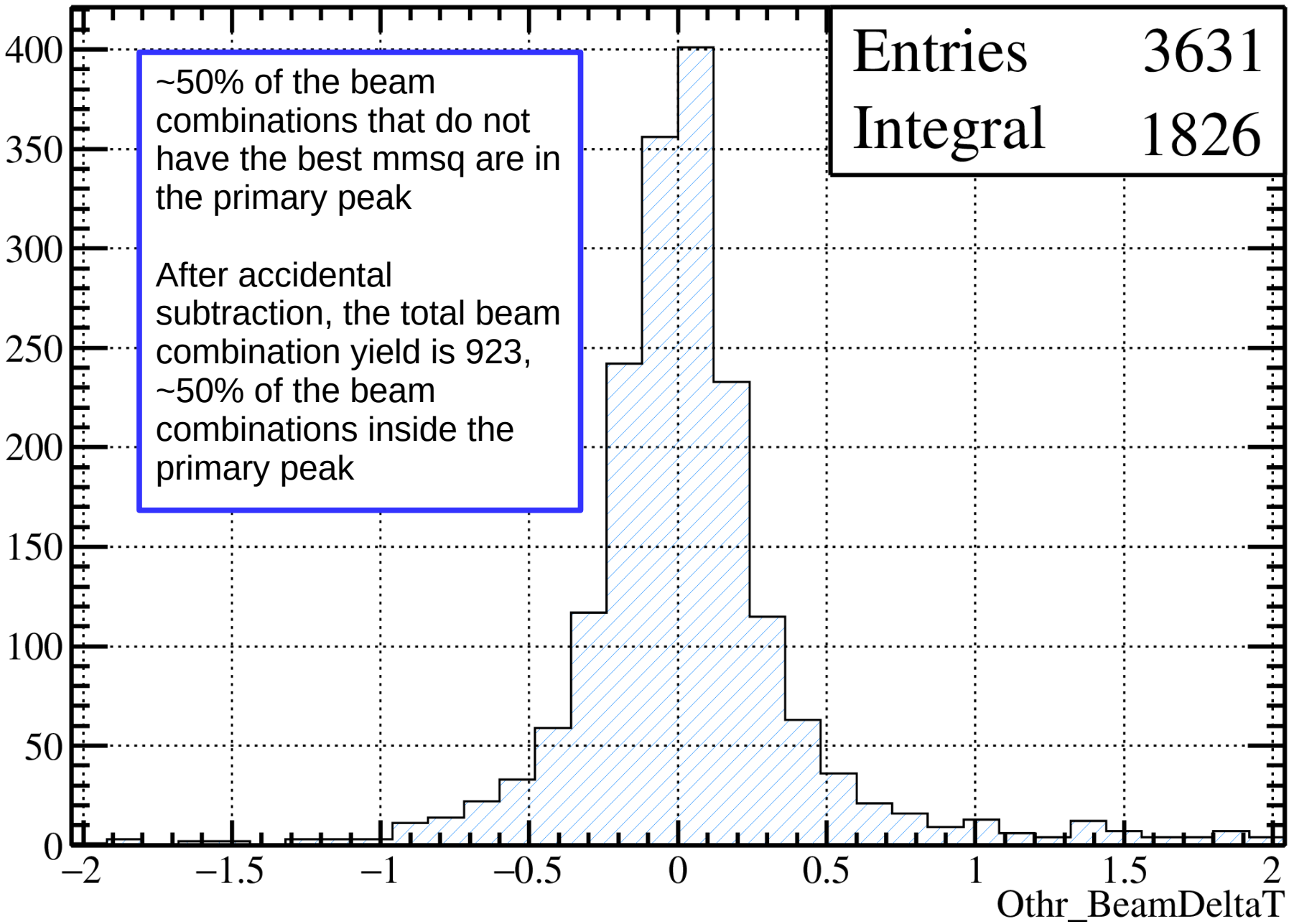
Beam Energy, Other Data



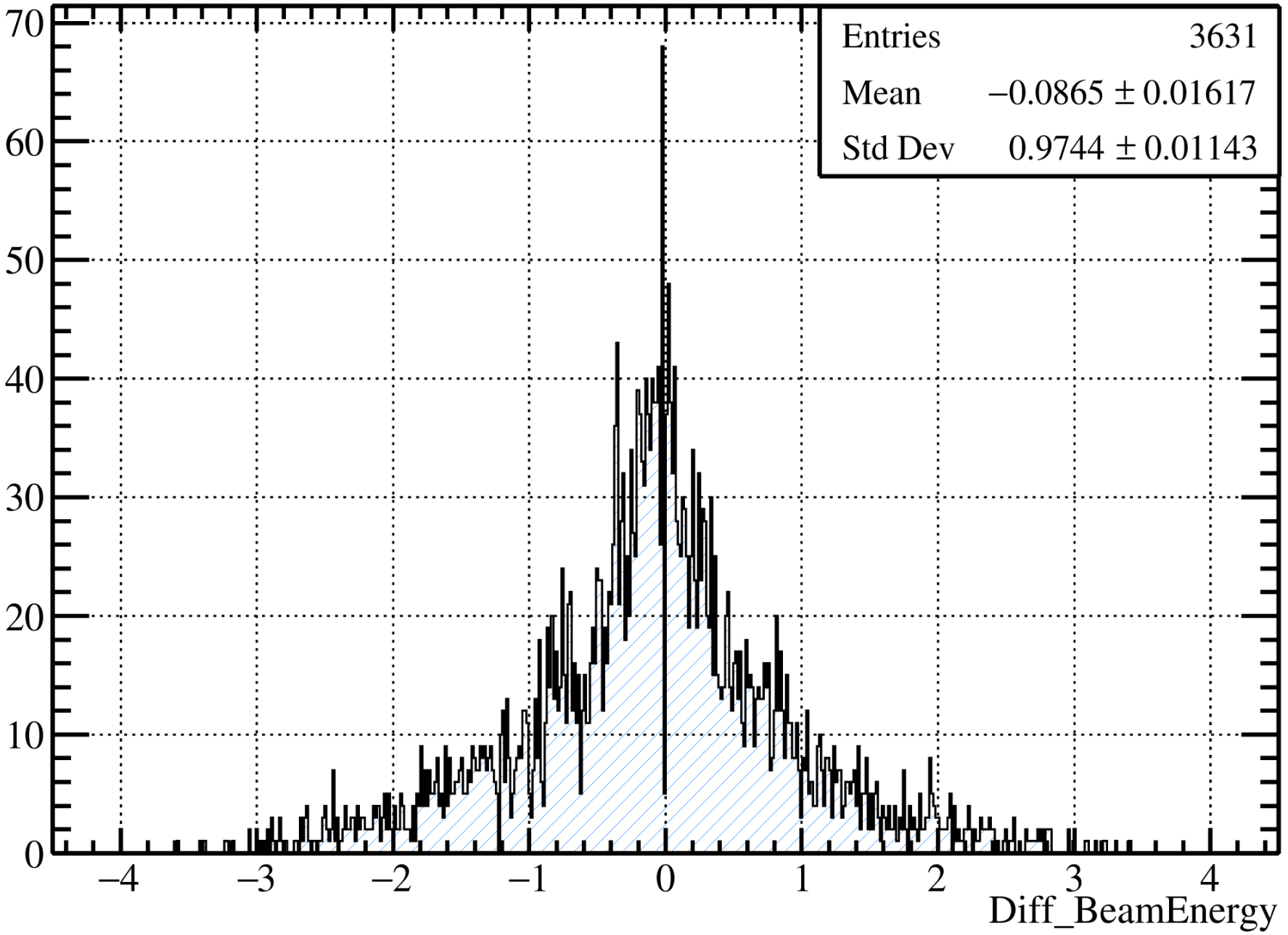
Beam DeltaT, Other Data



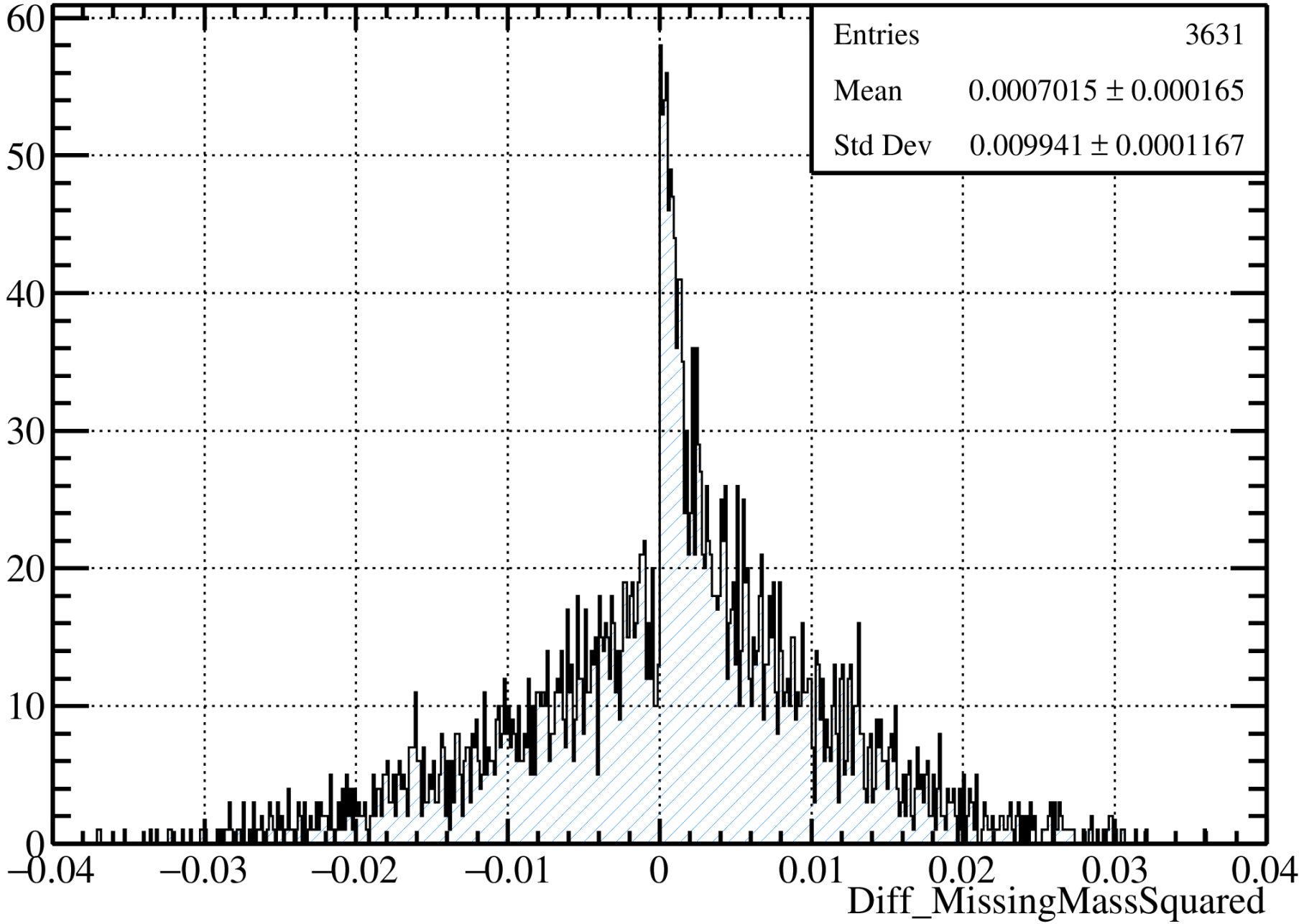
Beam DeltaT – Primary Peak,OtherData



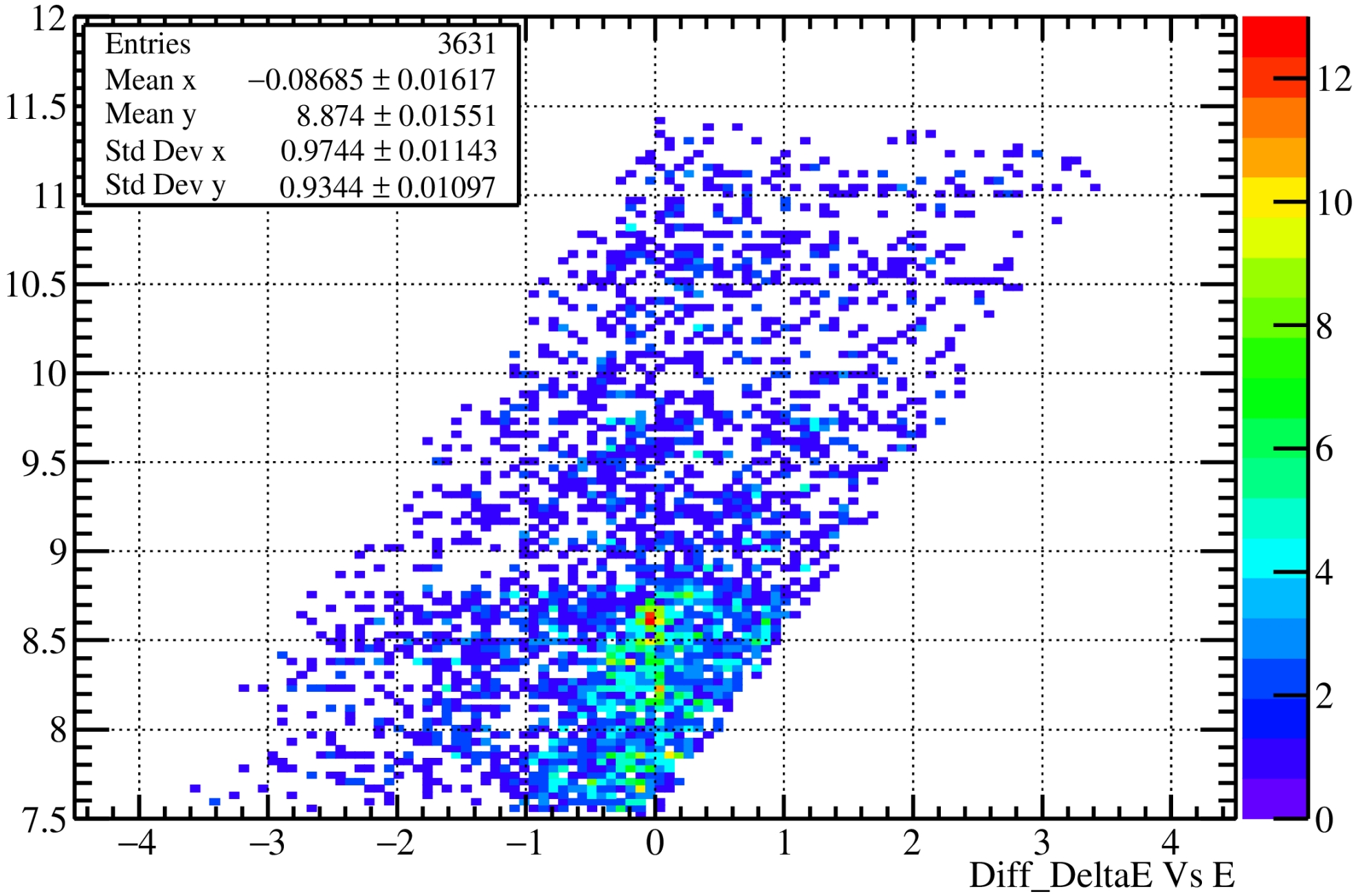
Beam Energy, Difference



Missing Mass Squared, Difference



DeltaE Vs E, Difference



Summary of Important Results

- Total Data: 70% Signal, 30% Accidental Contamination.
  Yield: 3864/5507 combinations

- Best Data: 80% Signal, 20% Accidental Contamination.
  Yield: 22971/3722 events

- Other Data: 50% Signal, 50% Accidental Contamination.
  Yield: 923/1826 combinations

- It should be Noted, this is after pK+K-gg selection. Technically the total event/combination yield will go down after selecting phi and eta, and then performing another background subtraction after that.