

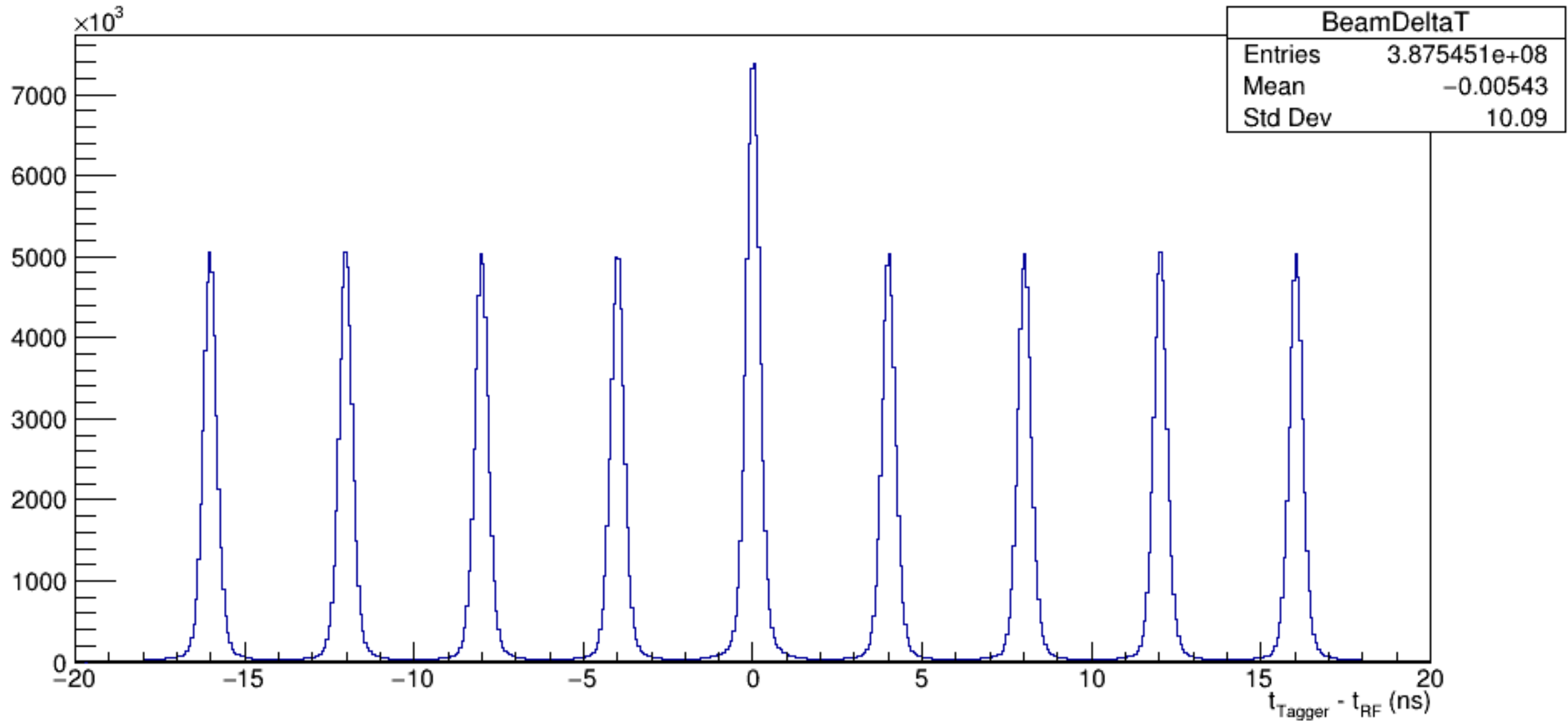
Prelim Analysis for Rho0 Candidate in Deuterium.

- ReactionFilter plugin is used to find the events for Rho0 channels to make an Analysis Trees.
- $\gamma + d \longrightarrow \pi^+ + \pi^- + p + (n)$
Reaction 1_45__8_9_m13 Flag: F4B4 (P4 and Vertex Constraint) with 4 Beam Bunches
- Dselector is used for analyzing of “Analysis Trees” produced from Reaction Filter Plugin.
- Location: /cache/halld/offline_monitoring/RunPeriod-2021-11/ver04/REST
- All available Deuterium Productions runs have been utilized.

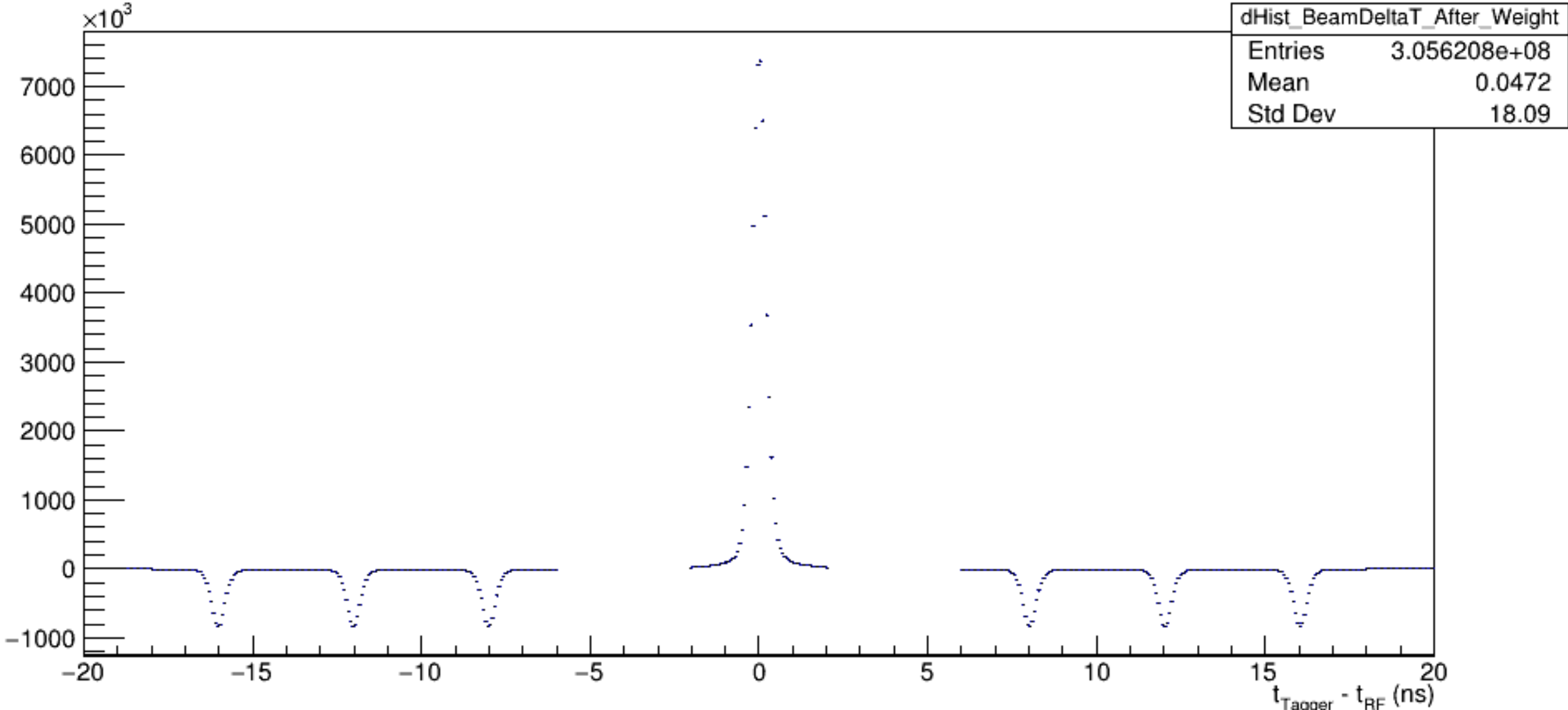
Applied Cuts

- $E_\gamma > 7.5 \text{ GeV}$
- $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$
- $CL > 0.001$ (Confidence level cut)
- $0.5 < MM2 < 1.5$ (Missing Mass Squared)
- $|t| > 1$ and $|u| > 1$
- (π^+p) Invariant Mass > 1.4 && (π^-p) Invariant Mass > 1.4

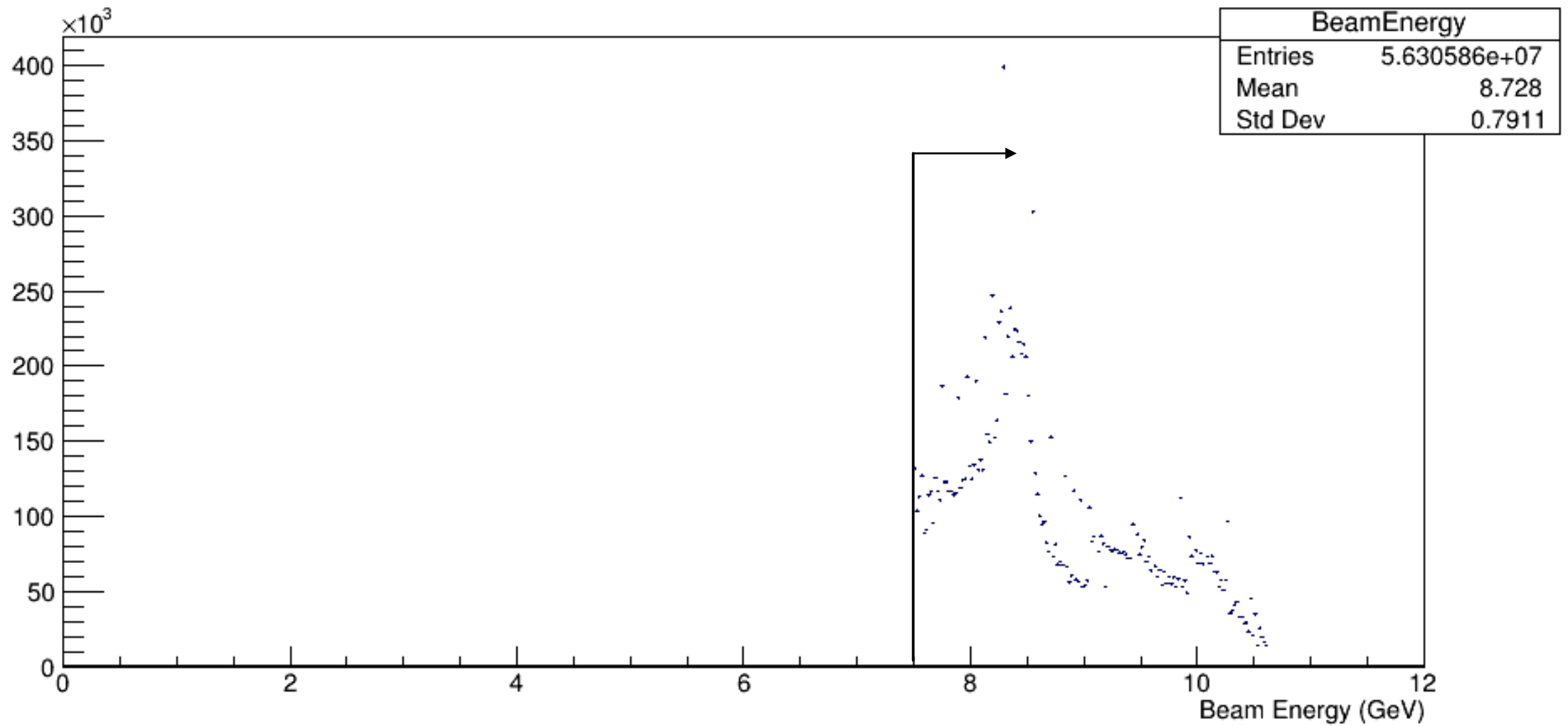
BeamDeltaT



Beam Delta T Accidental Subtracted.

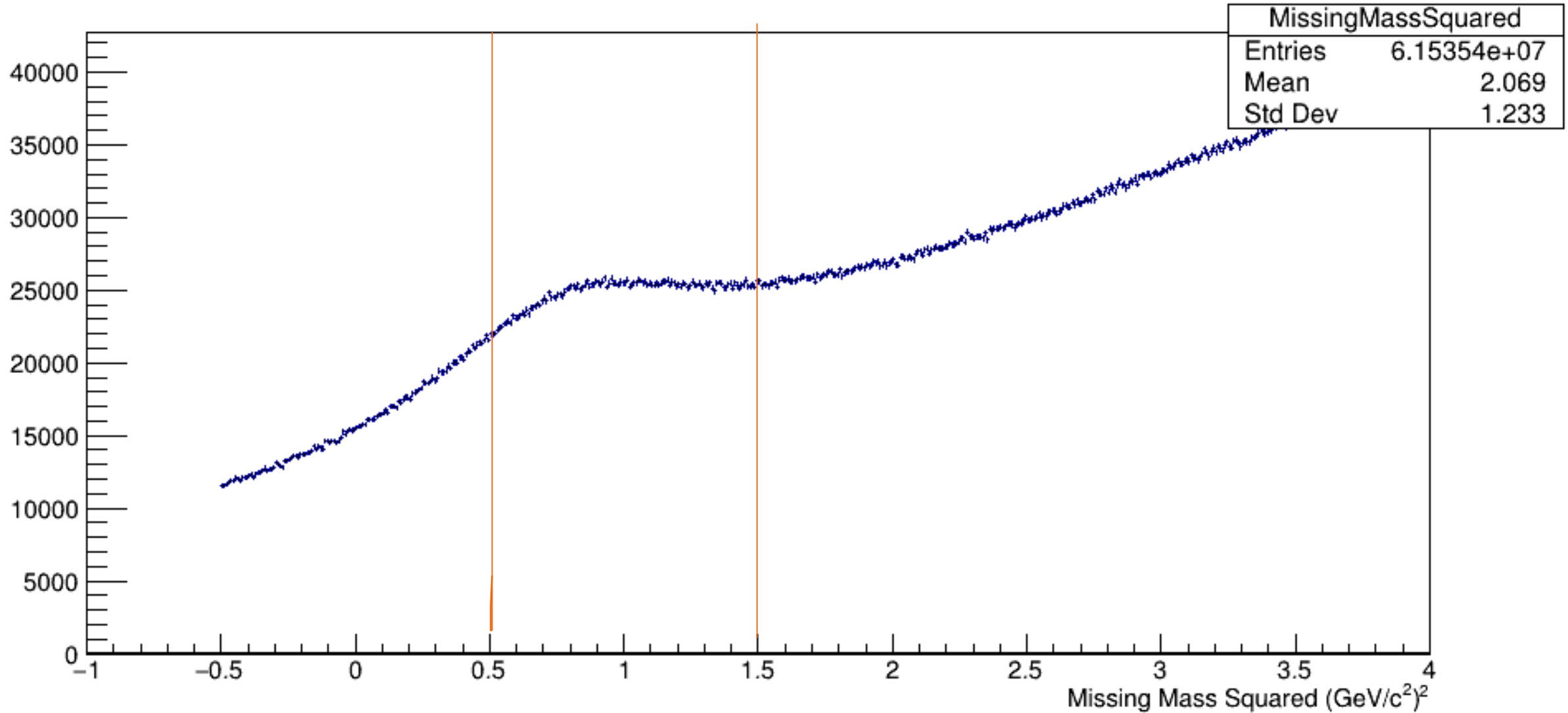


Beam Energy



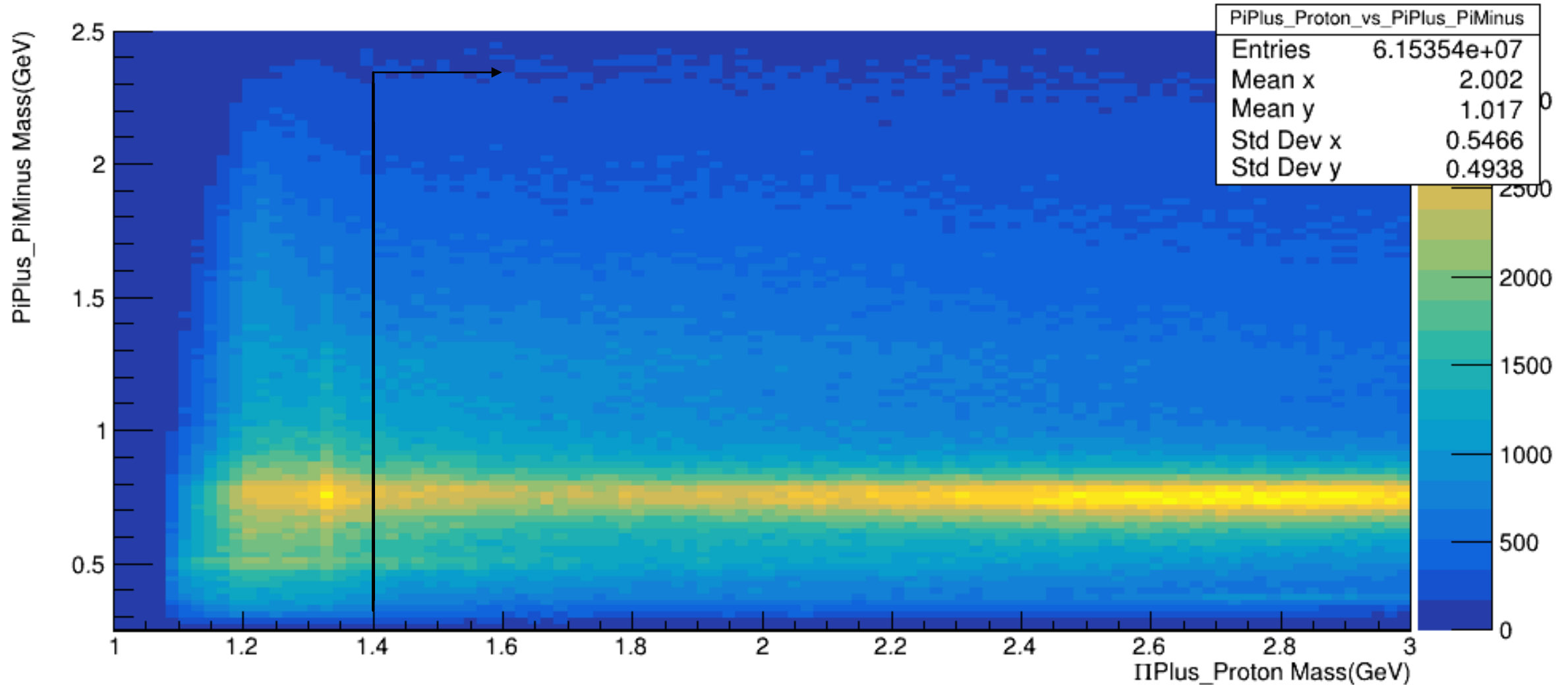
Missing Mass Squared

Cut Applied: $E_\gamma > 7.5 \text{ GeV}$, $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$



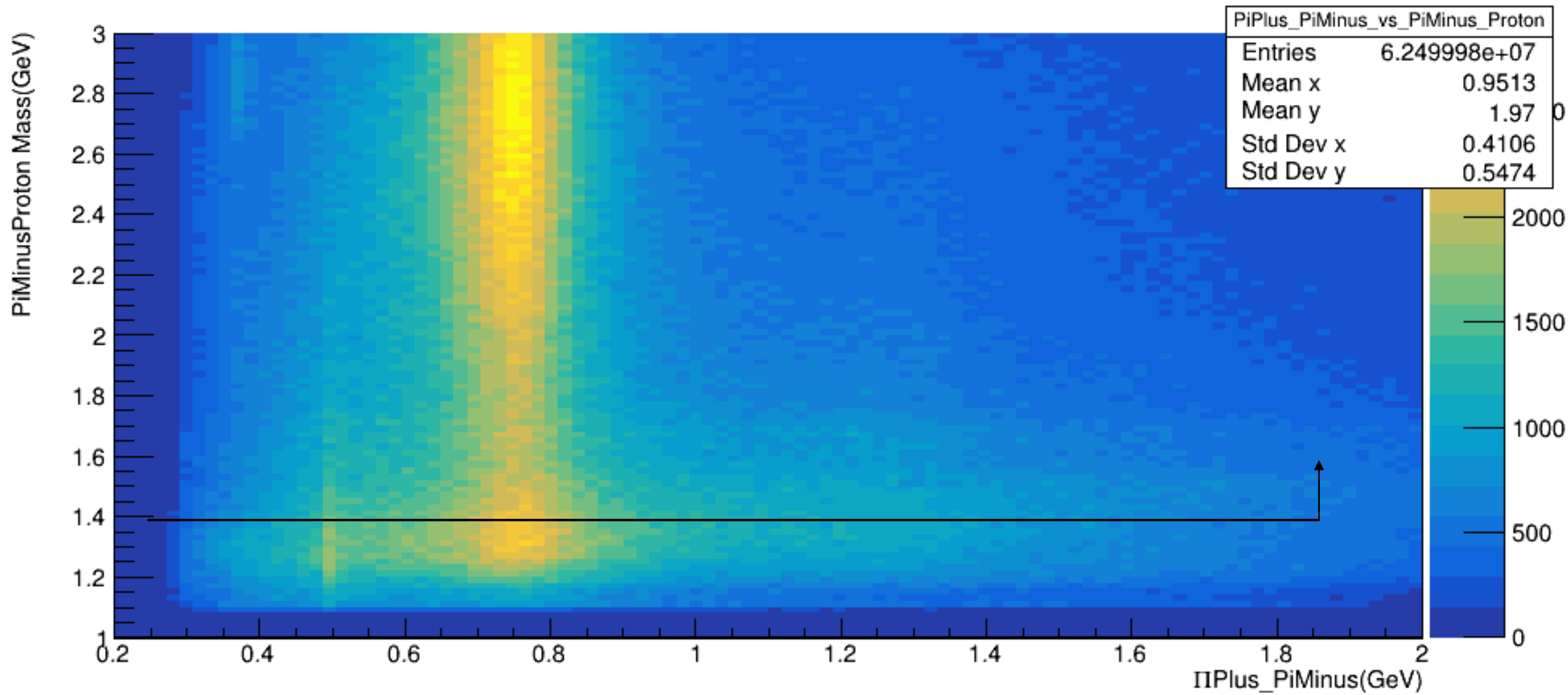
2D Invariant Mass

Cut Applied: $E_\gamma > 7.5$ GeV , $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$



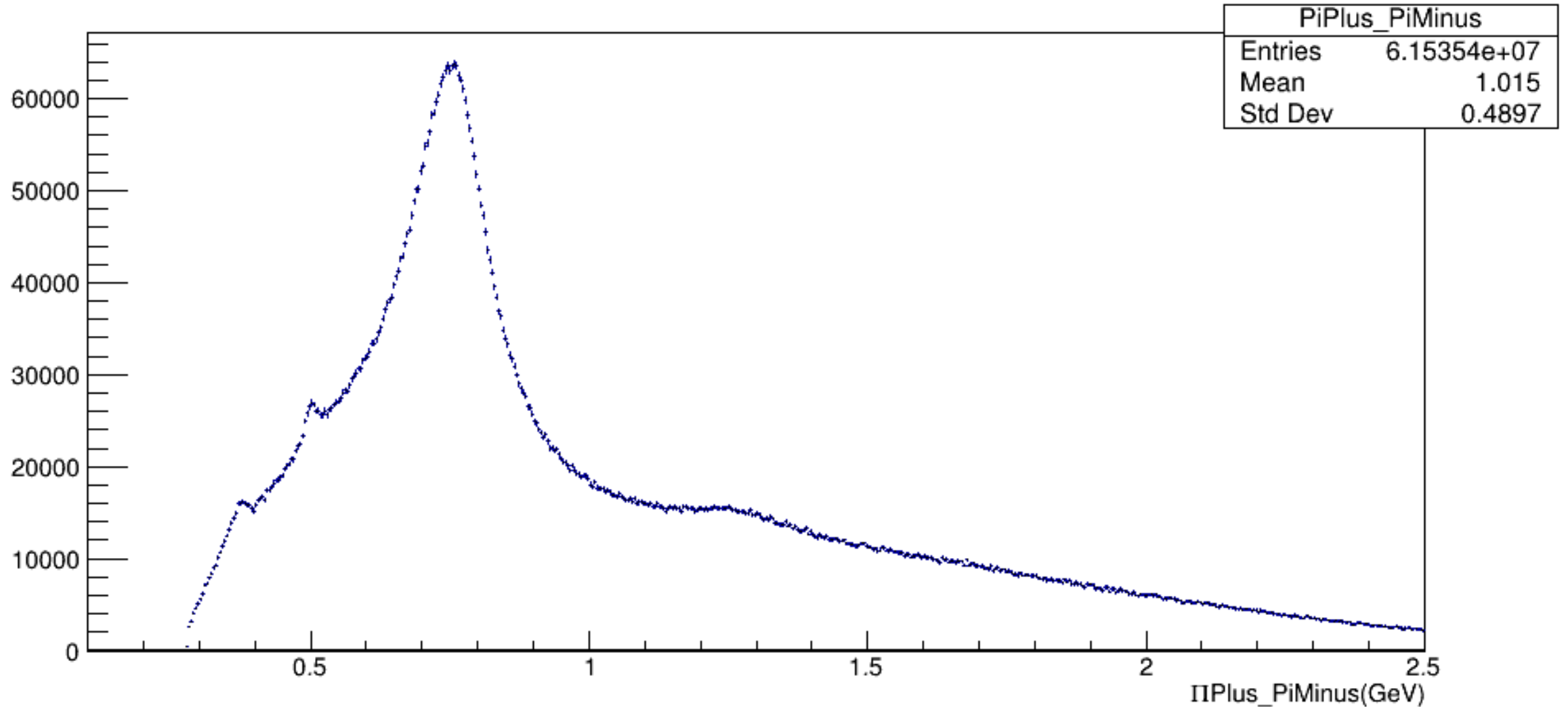
2D Invariant Mass

Cut Applied. $E_\nu > 7.5$ GeV , $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$



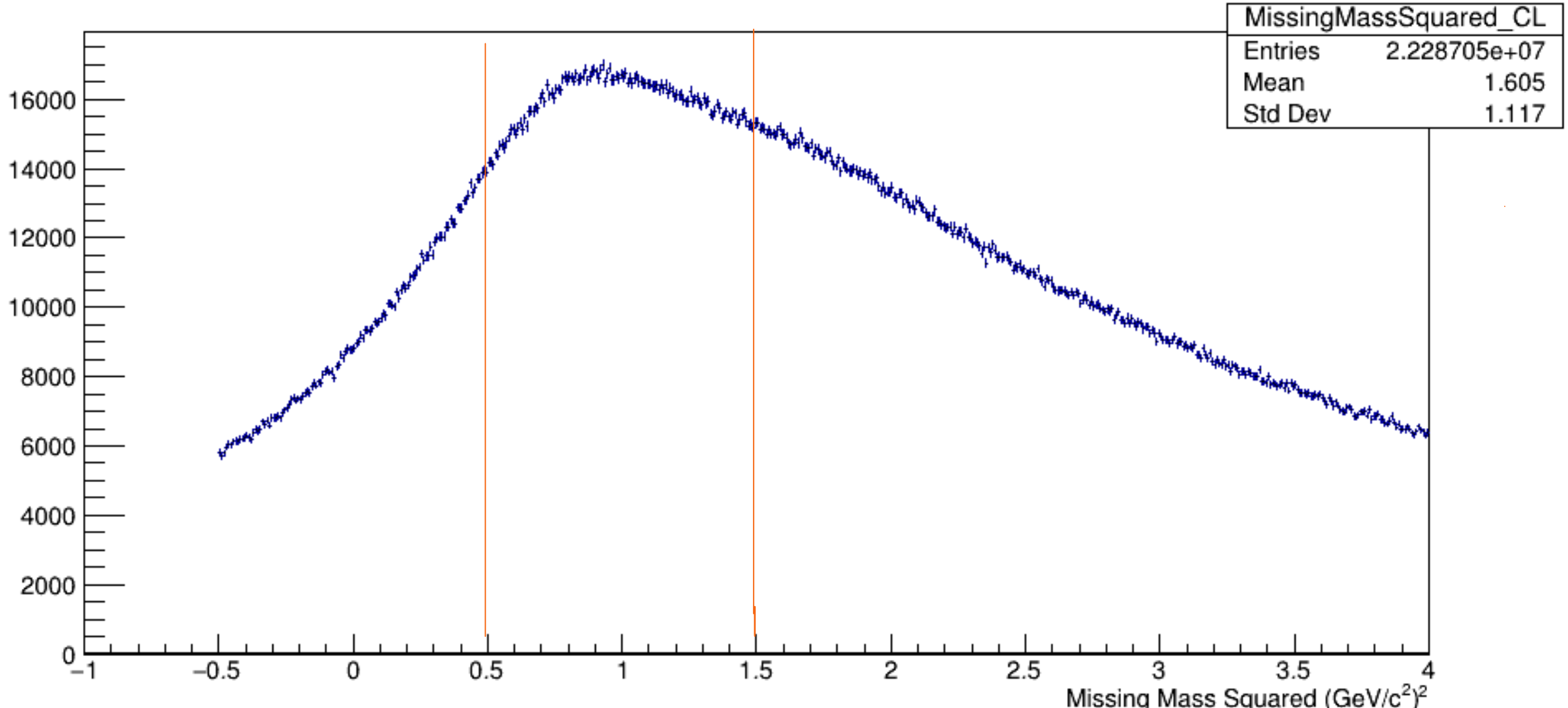
$(\pi^+ \pi^-)$ Invariant Mass

Cut Applied: $E_\gamma > 7.5 \text{ GeV}$, $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$



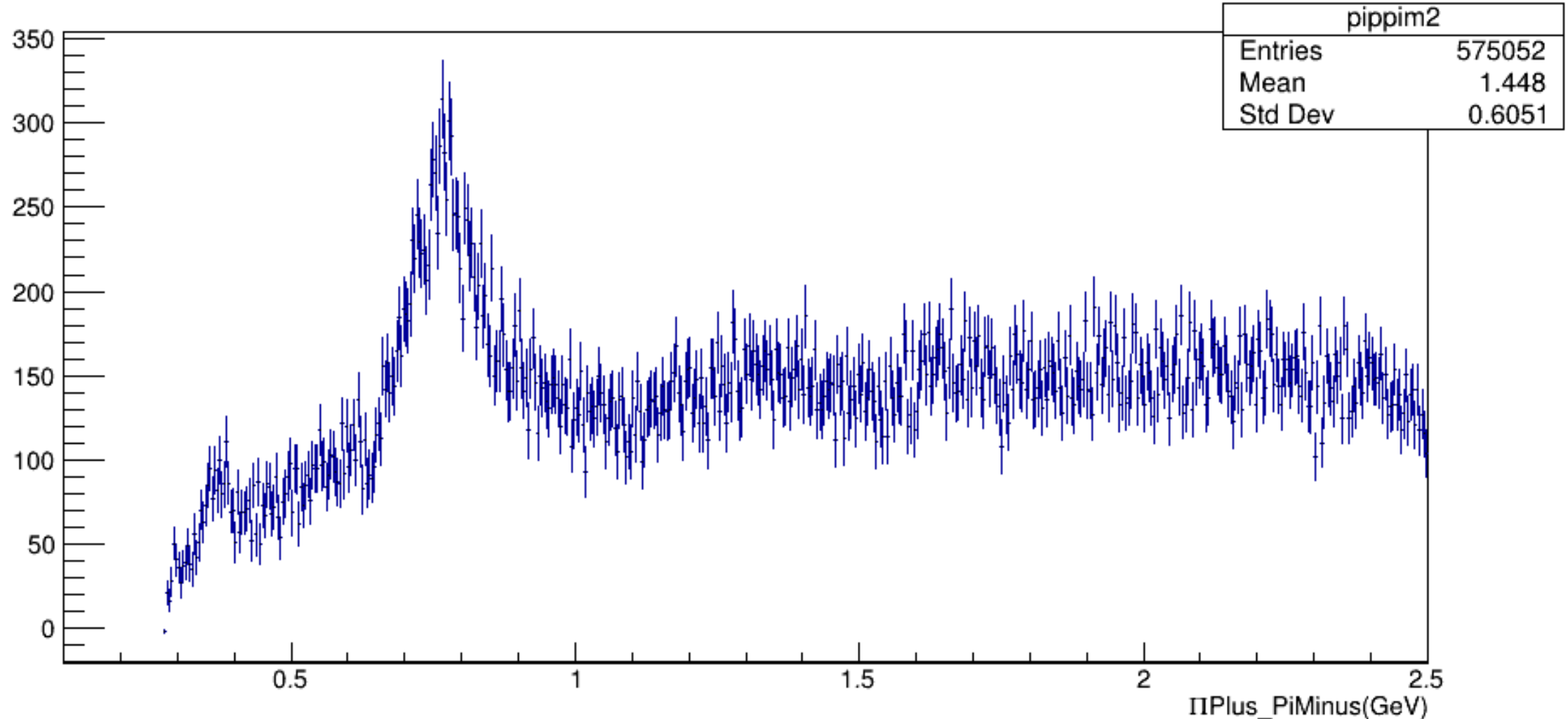
Missing Mass Squared

Cut Applied: $E_\gamma > 7.5 \text{ GeV}$, $52 \text{ c.m.} < Z_{\text{vertex}} < 78 \text{ c.m.}$, $CL > 0.001$ (Confidence level cut)



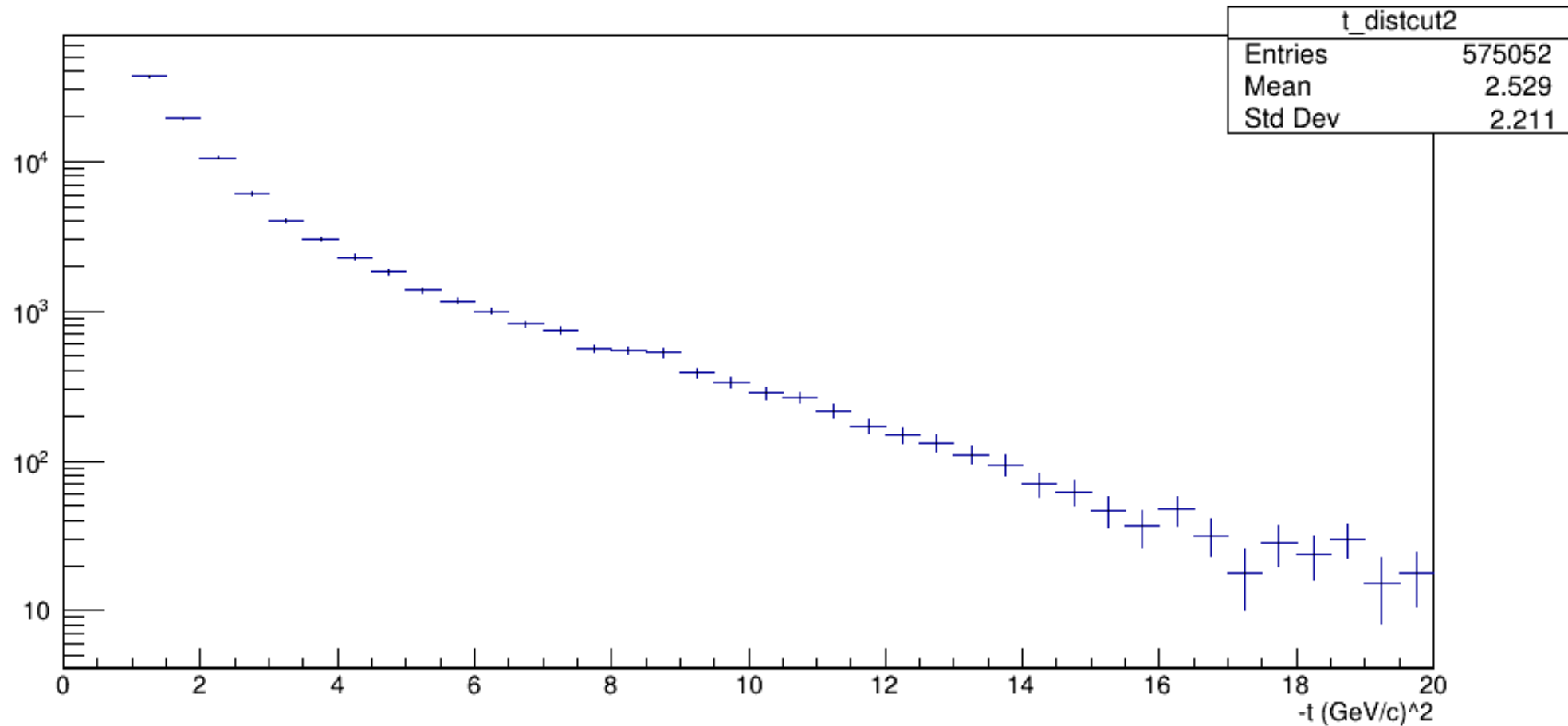
$(\pi^+ \pi^-)$ Invariant Mass

- Cut Applied: $E_\gamma > 7.5 \text{ GeV}$, $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$, $CL > 0.001$, $0.5 < MM2 < 1.5$ $|t| > 1$ and $|u| > 1$
- $(\pi^+ p)$ Invariant Mass > 1.4 && $(\pi^- p)$ Invariant Mass > 1.4



$|t|$ distribution

- Cut Applied: $E_\gamma > 7.5$ GeV , $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$, $CL > 0.001$, $0.5 < MM2 < 1.5$ $|t| > 1$ and $|u| > 1$
- (π^+p) Invariant Mass > 1.4 && (π^-p) Invariant Mass > 1.4



|u| distribution

- Cut Applied: $E_\gamma > 7.5 \text{ GeV}$, $52 \text{ c.m} < Z_{\text{vertex}} < 78 \text{ c.m}$, $CL > 0.001$, $0.5 < MM2 < 1.5$ $|t| > 1$ and $|u| > 1$
- (π^+p) Invariant Mass > 1.4 && (π^-p) Invariant Mass > 1.4

