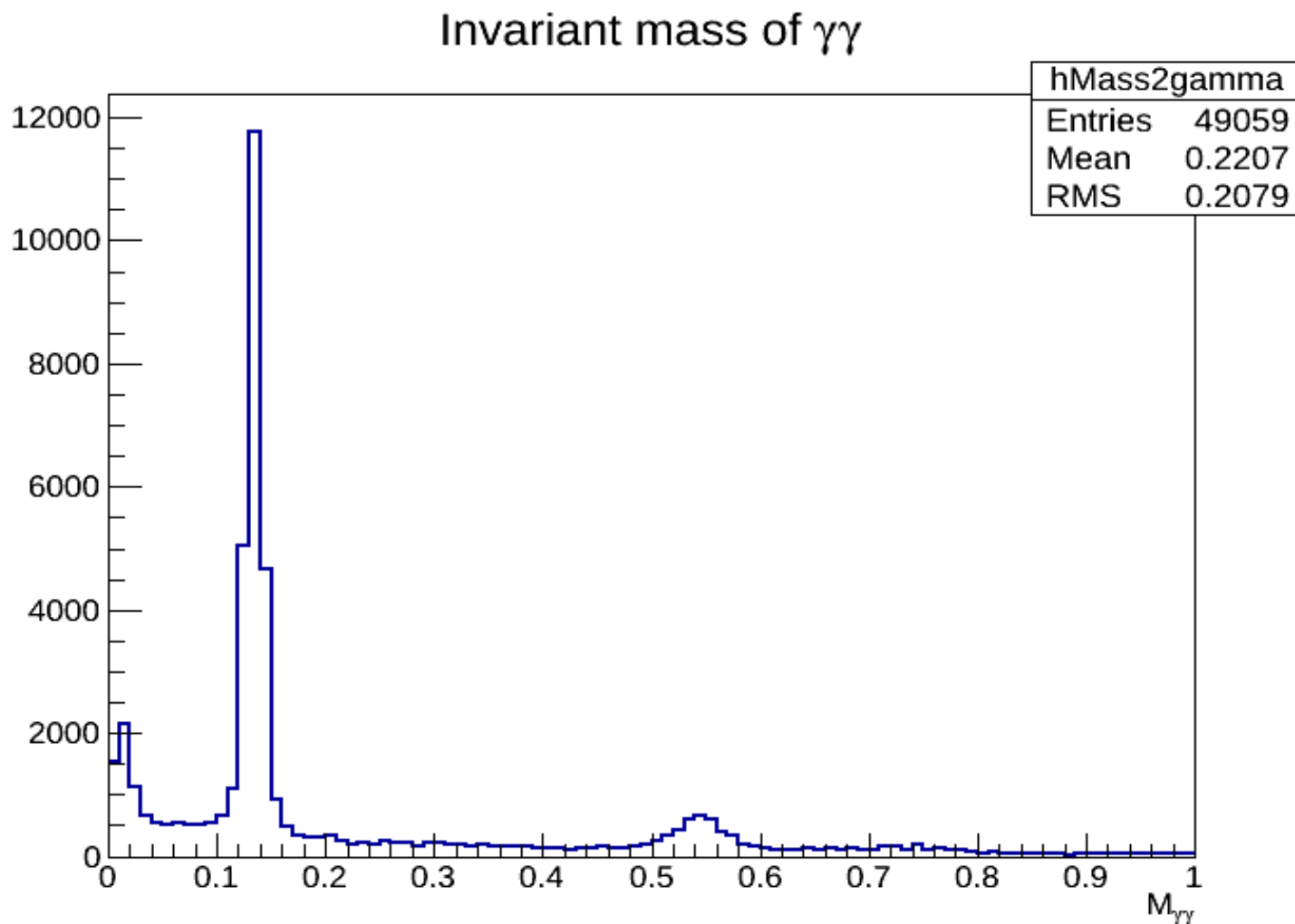


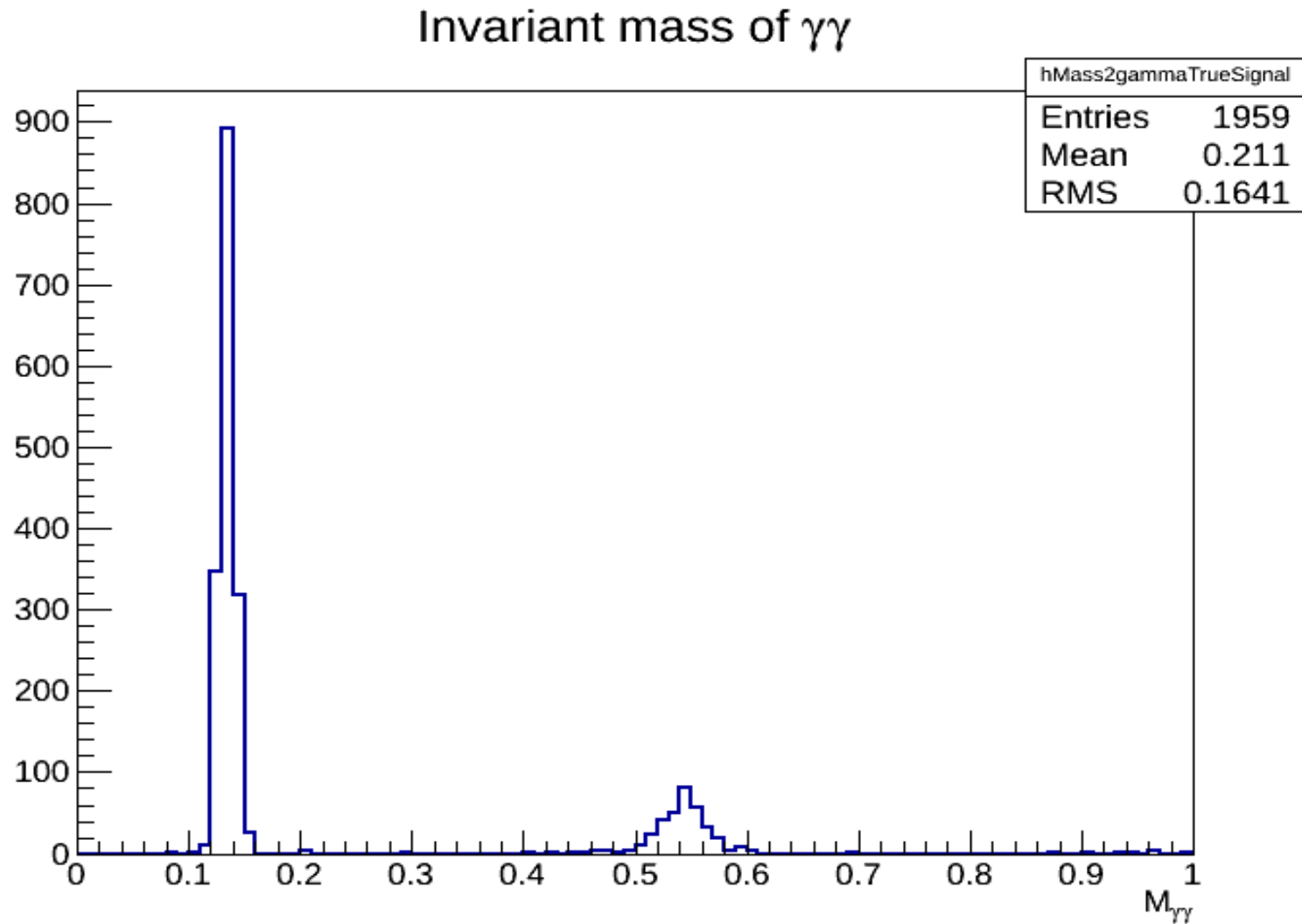
Two photons invariant mass distribution (for all Signal with beam energy > 6GeV and Unused Energy < 0.5 Gev)



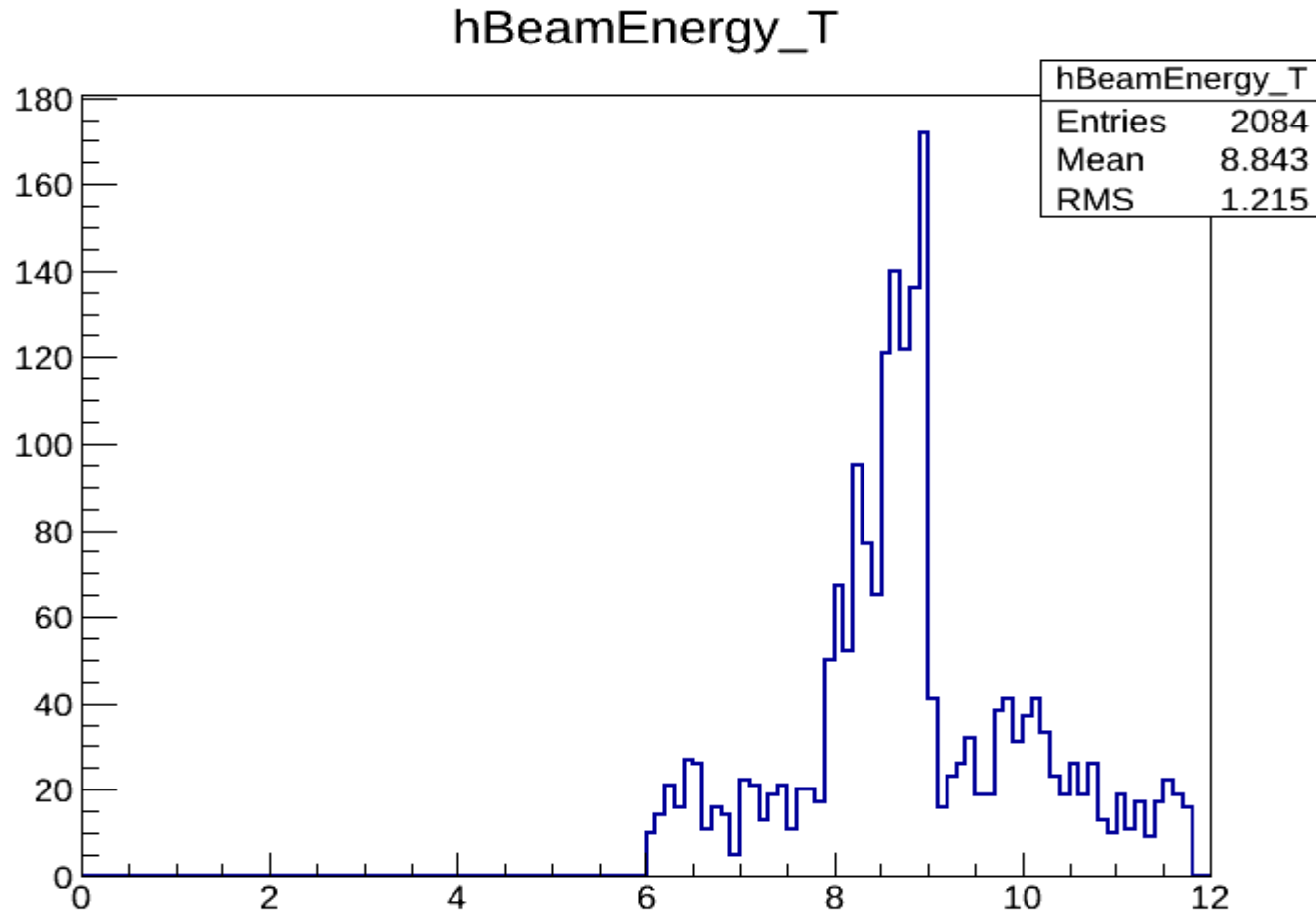
Definition of True Signal

- Two reconstructed photons matched to 2 generator level photons
- Has proton in generator level final states
- Only 2 generated photons in final states
- $|\text{Missing Mass squared}| < 0.01$ at generator level (no extra generated particles in final state)
- True Beam particle (having correct beam photon which generates this event)

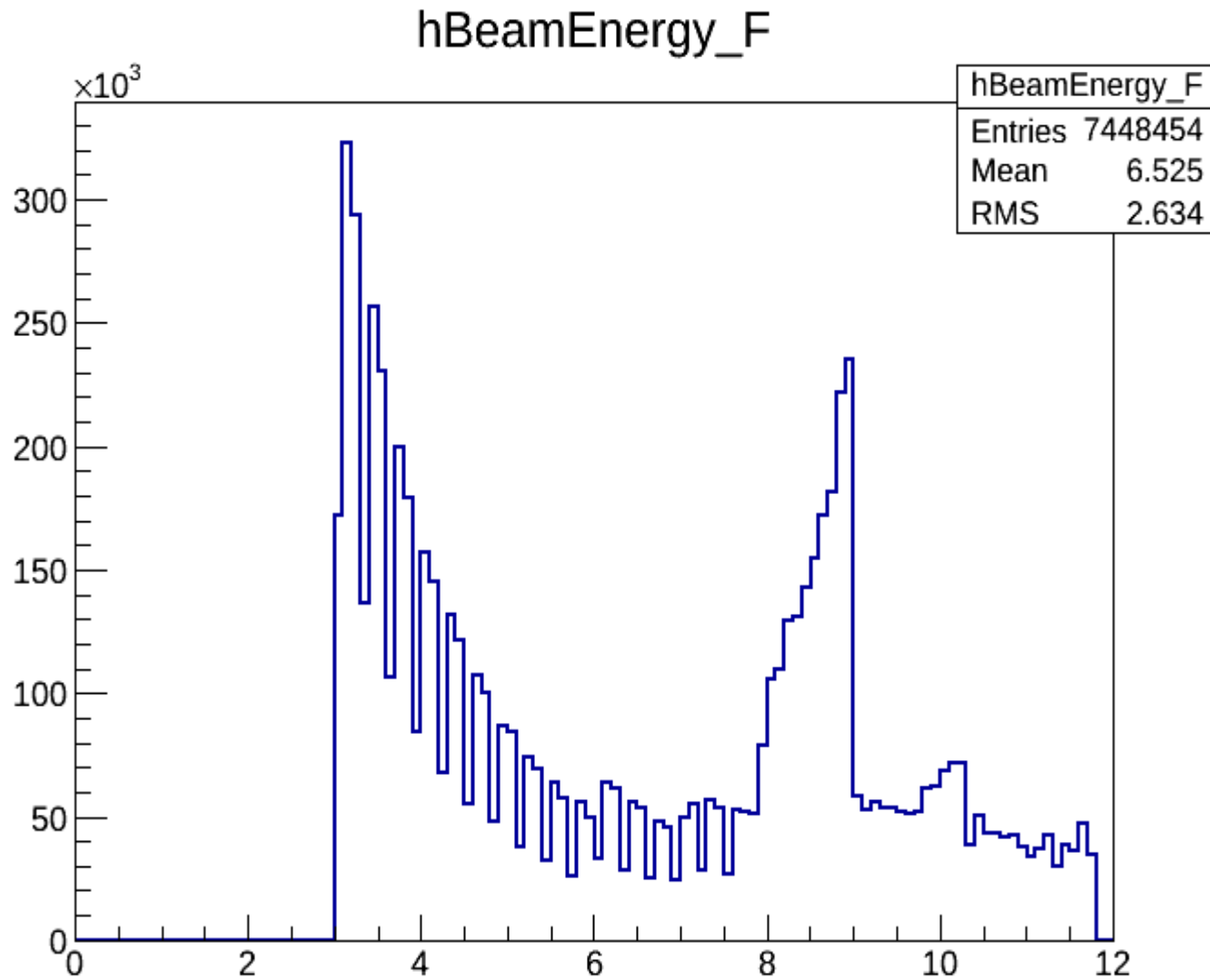
Two photons invariant Mass distribution for True signal



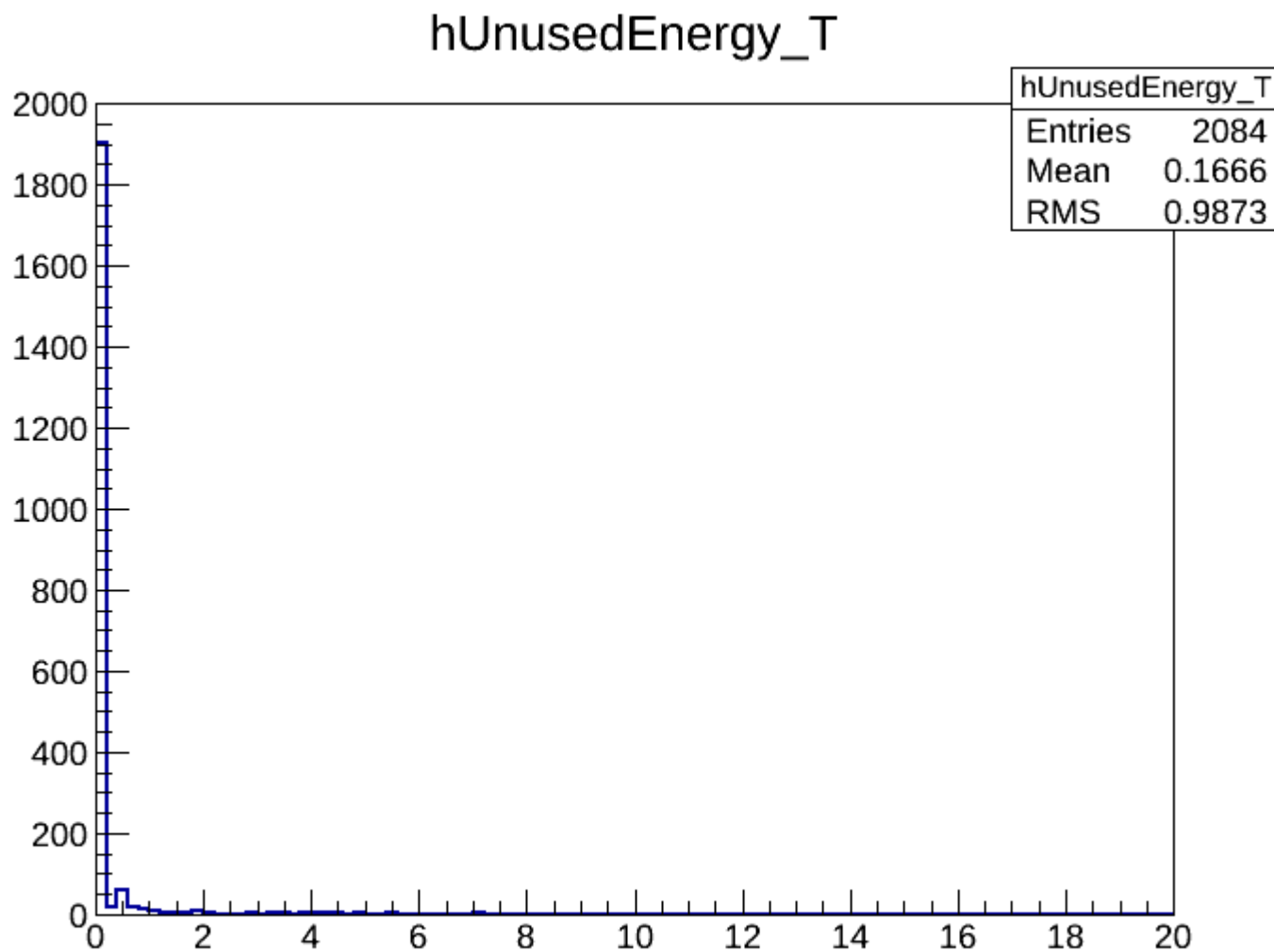
Beam energy distribution for True Signal



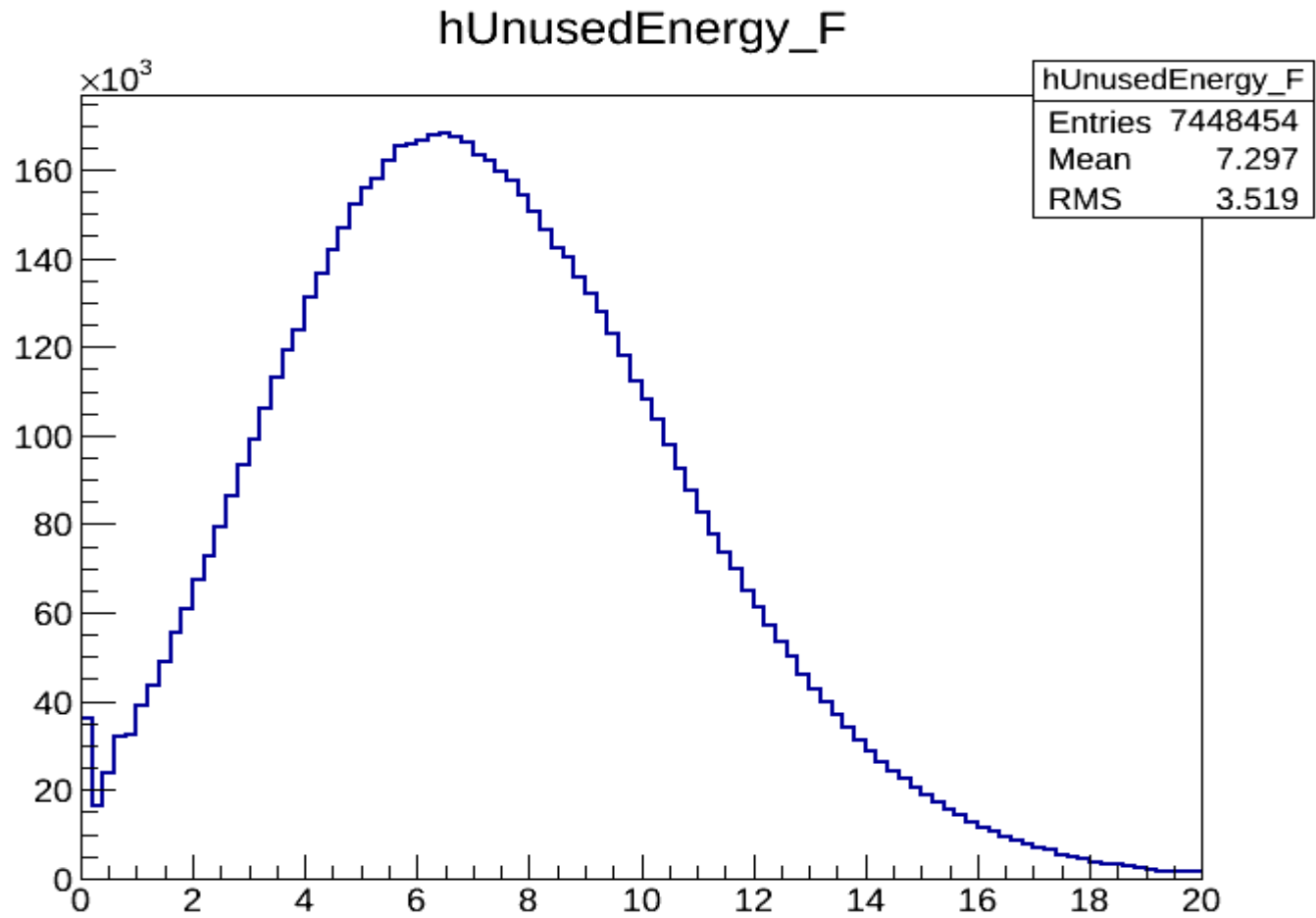
Beam energy distribution for False signal



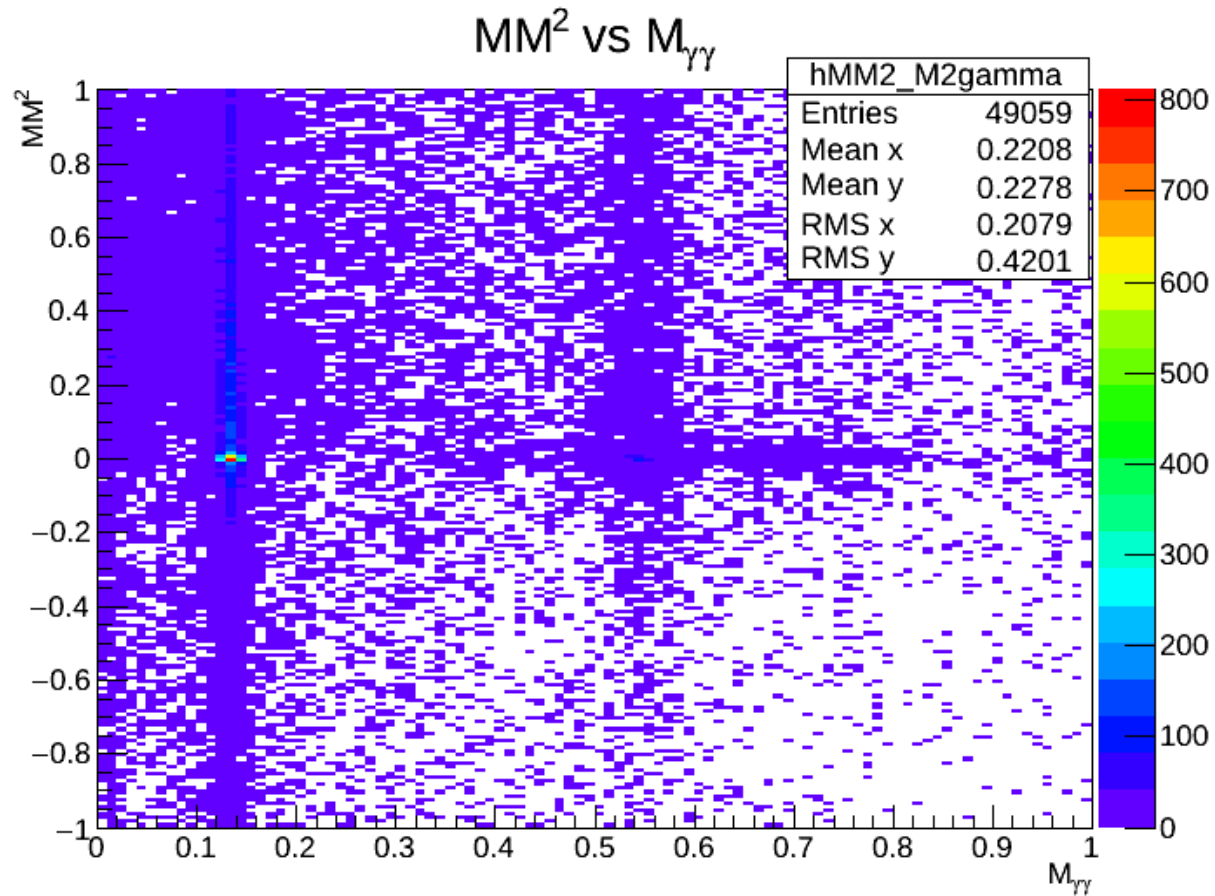
Unused energy distribution for True signal



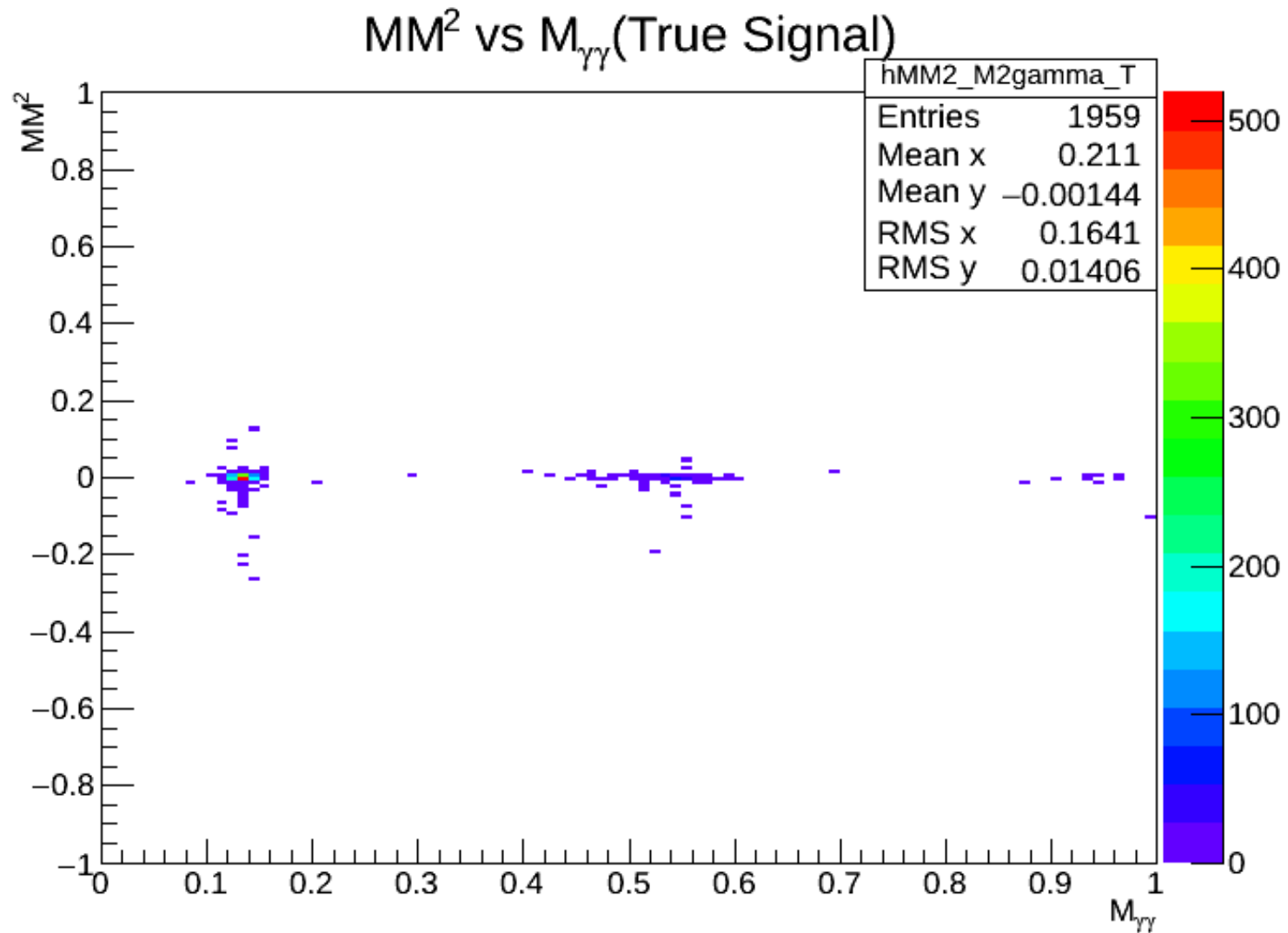
Unused Energy distribution for False signal



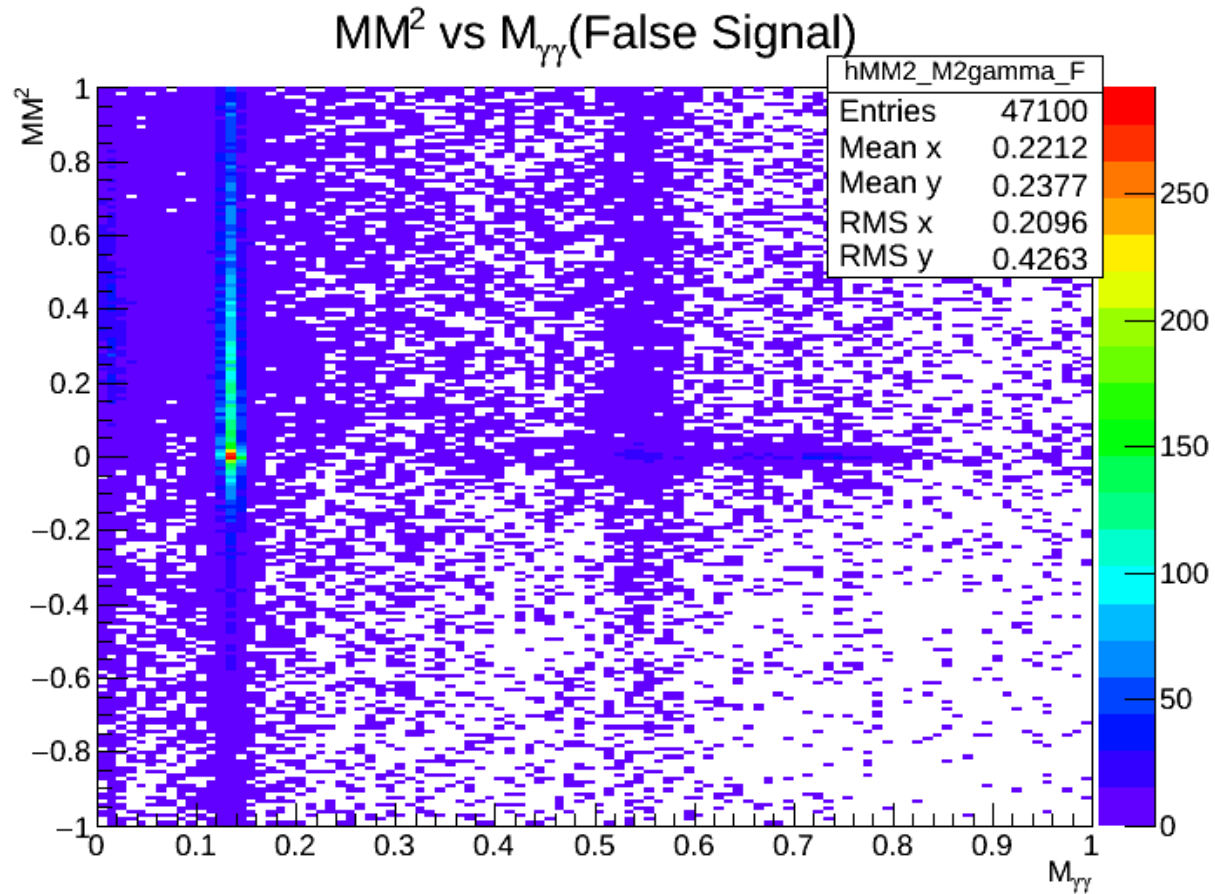
Plot of missing Mass squared for all signal



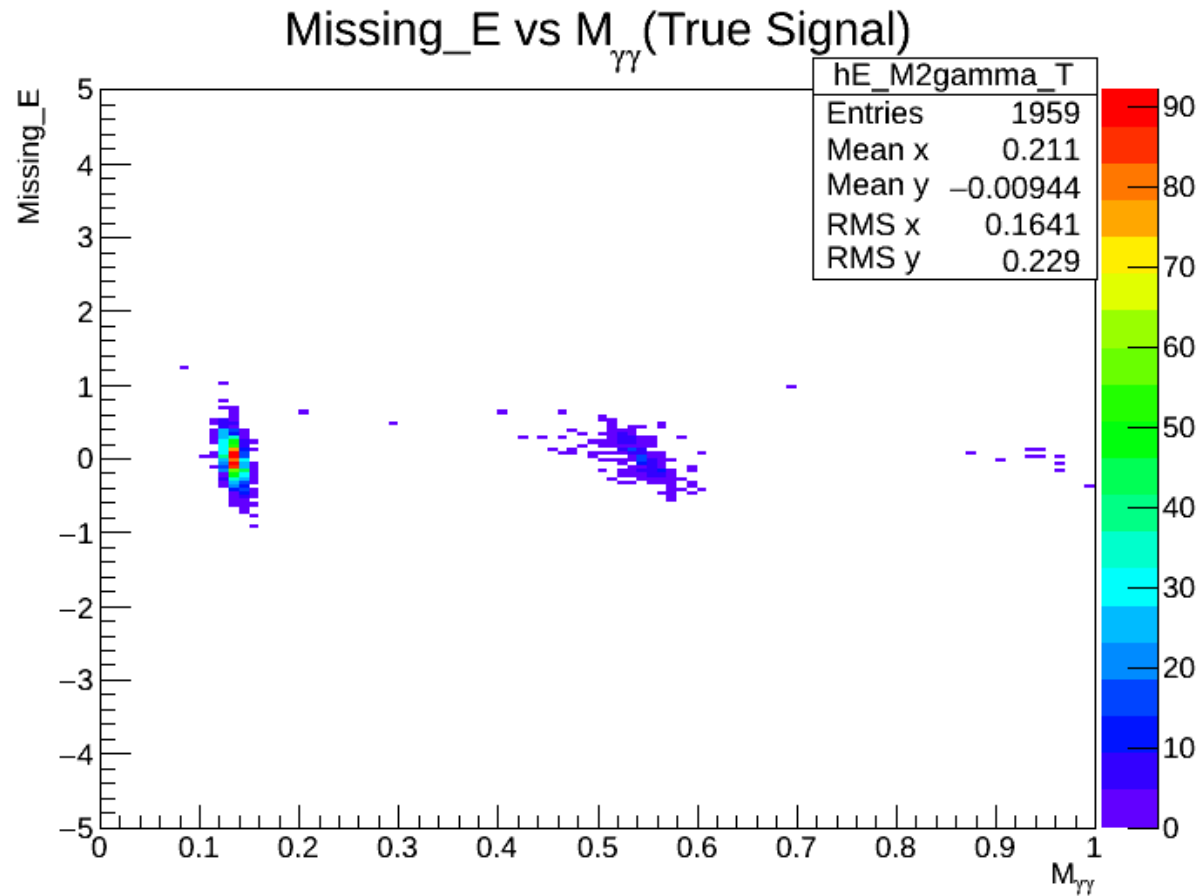
Plot of Missing Mass squared for True signal



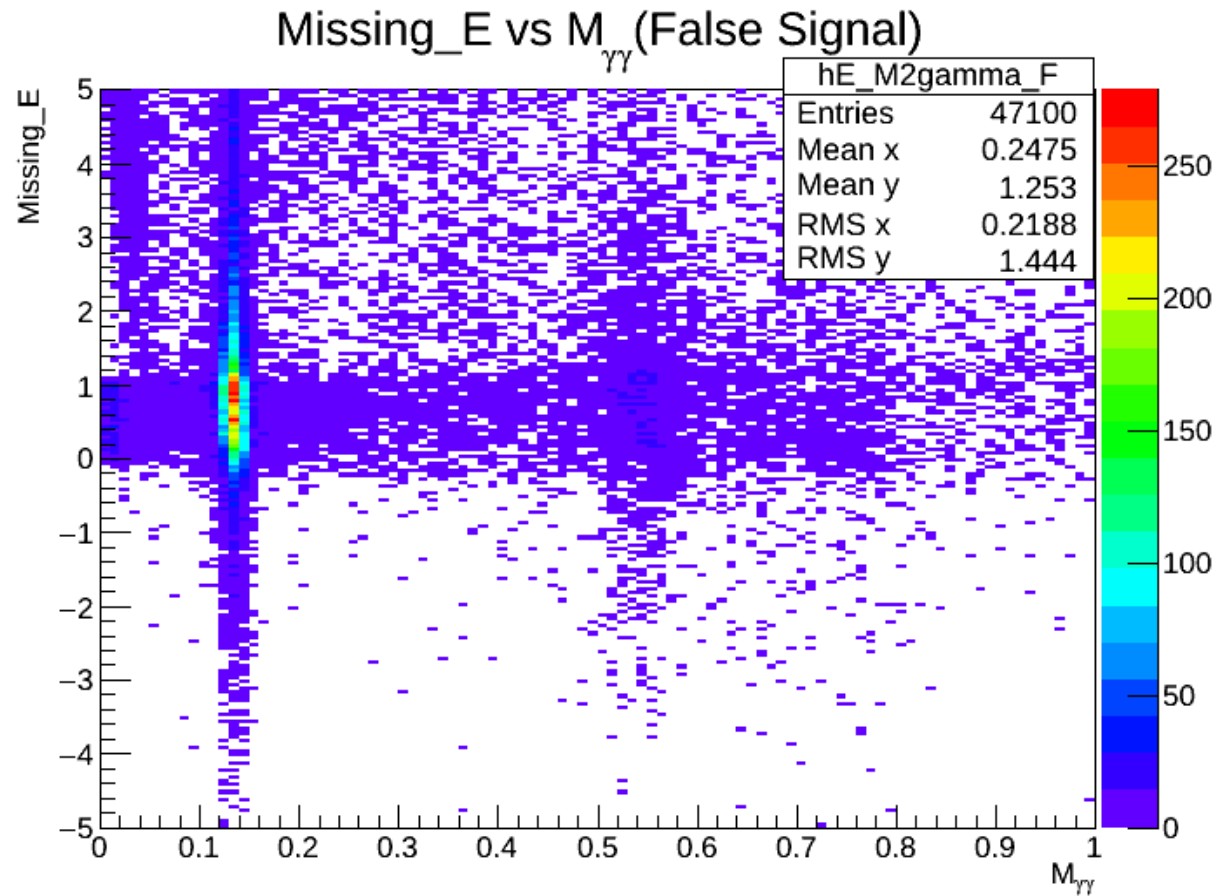
Plot of missing mass squared for False signal



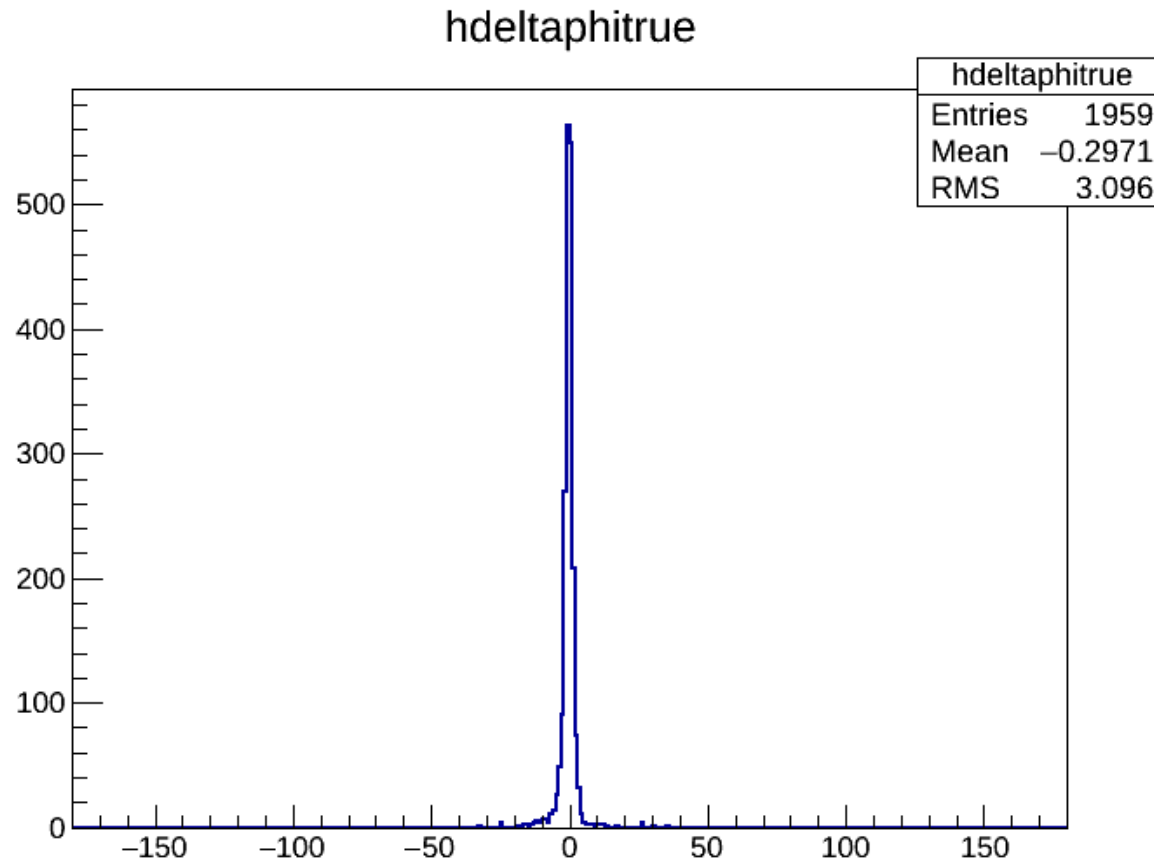
Plot of missing energy for True signal



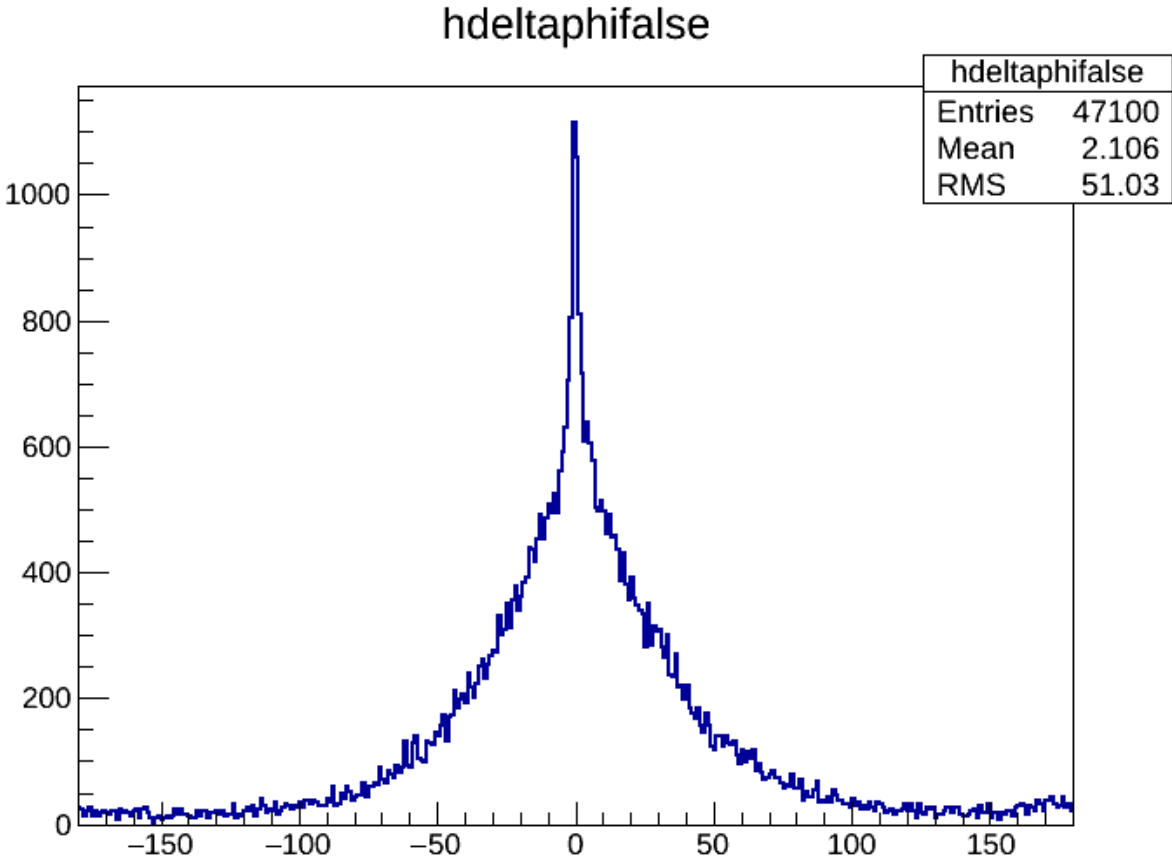
Missing energy plot for False signal



Delta phi plot for True signal

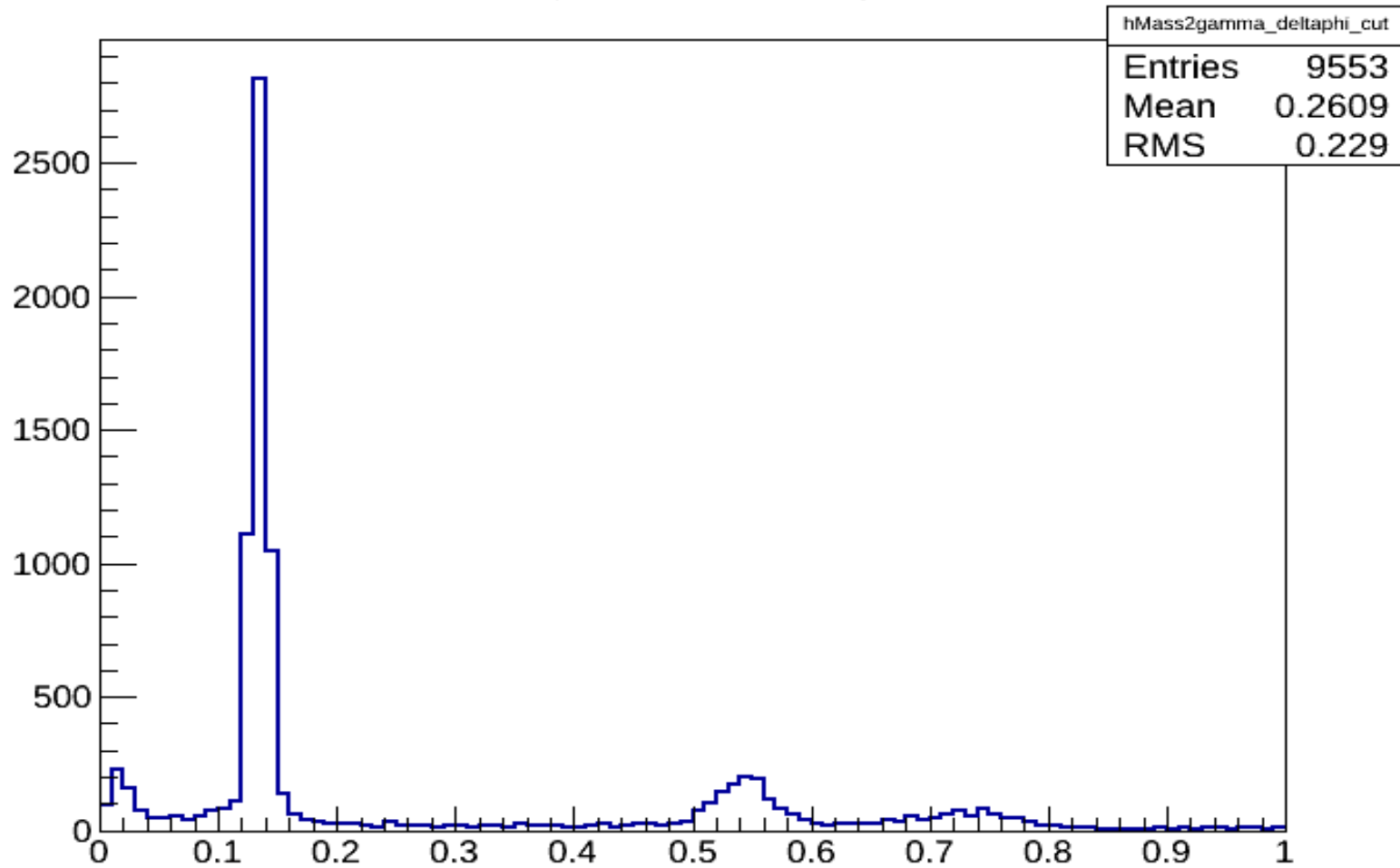


Delta phi for False signal

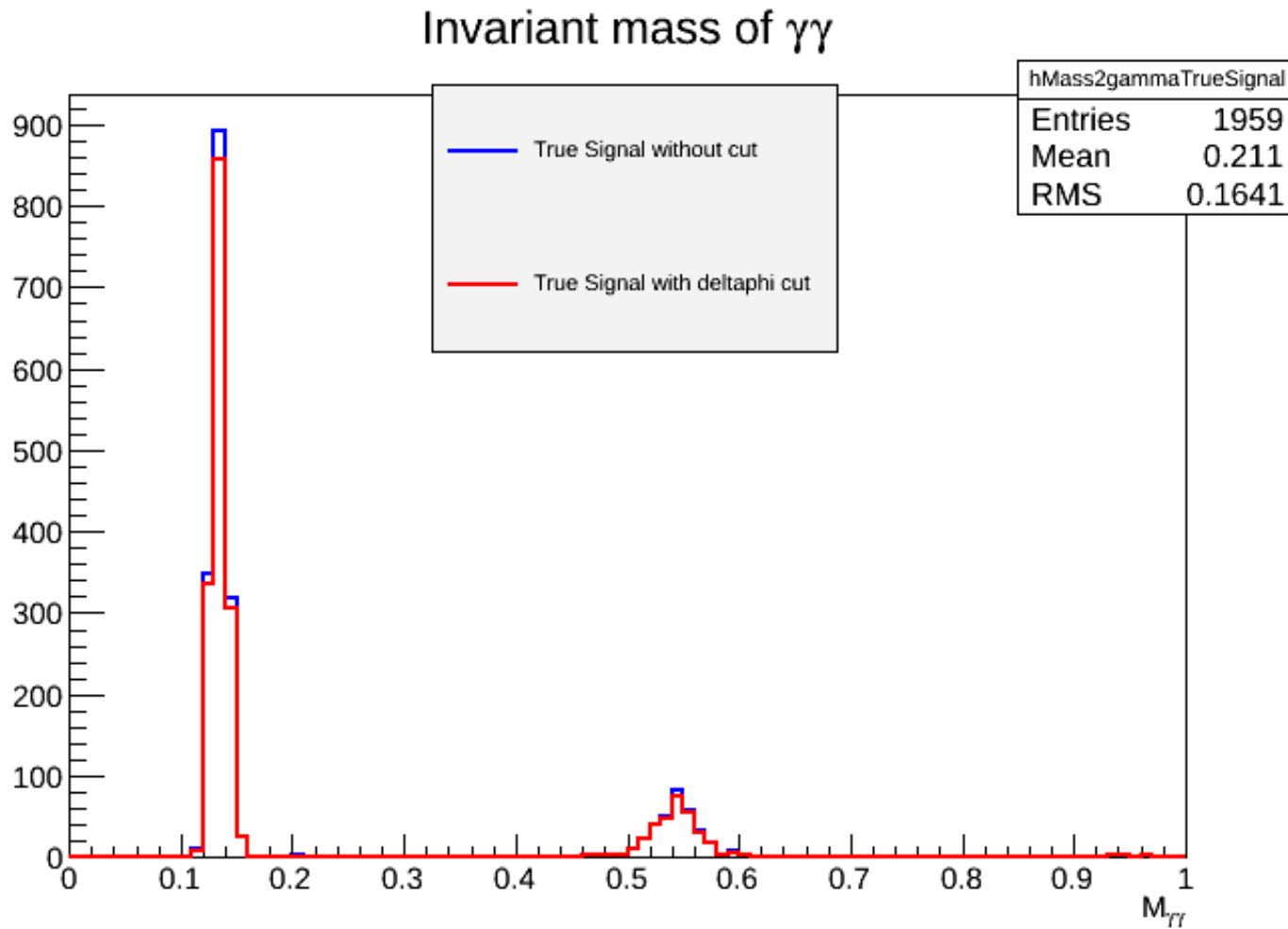


Delta phi cut [-5,5]

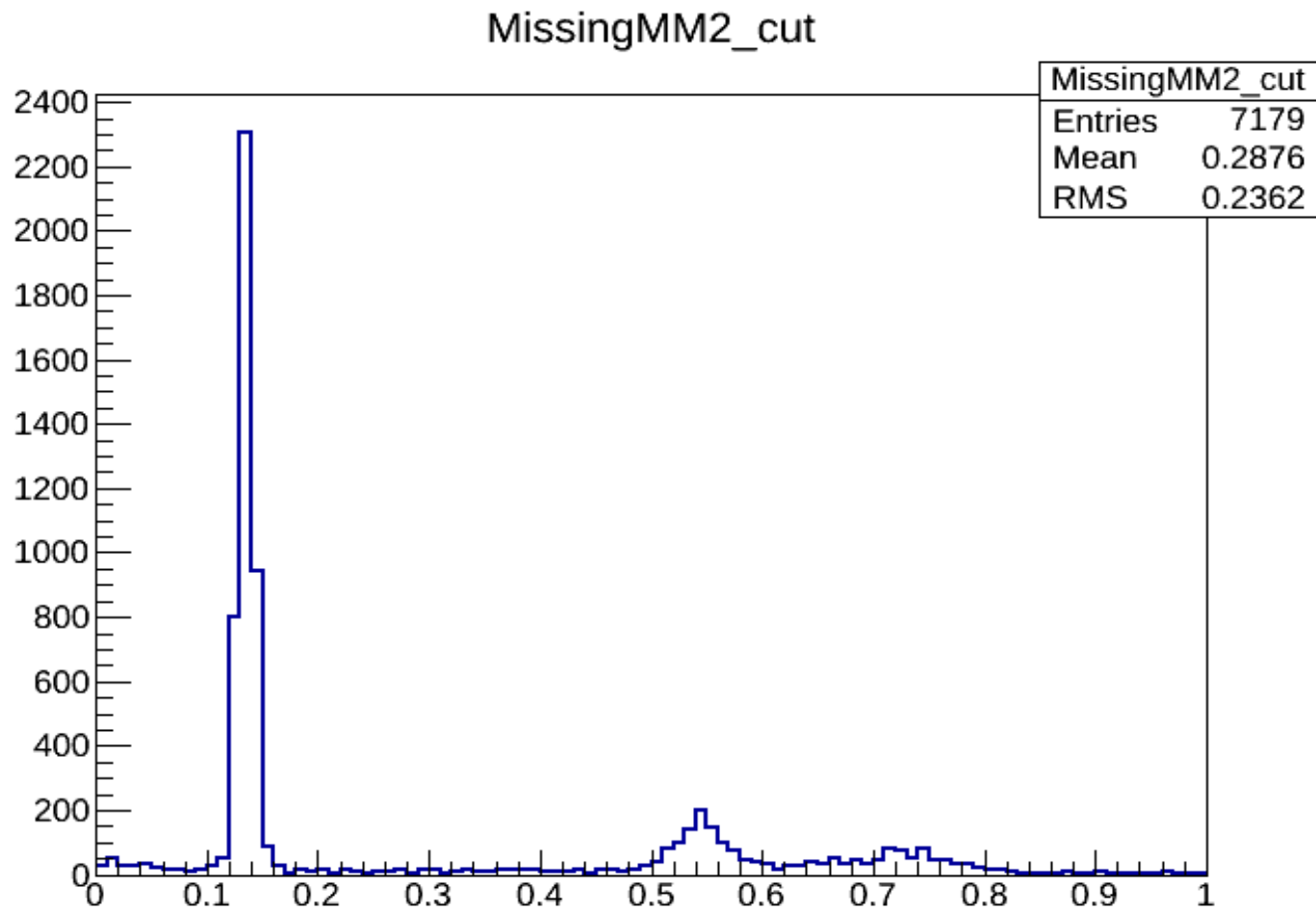
hMass2gamma_deltaphi_cut



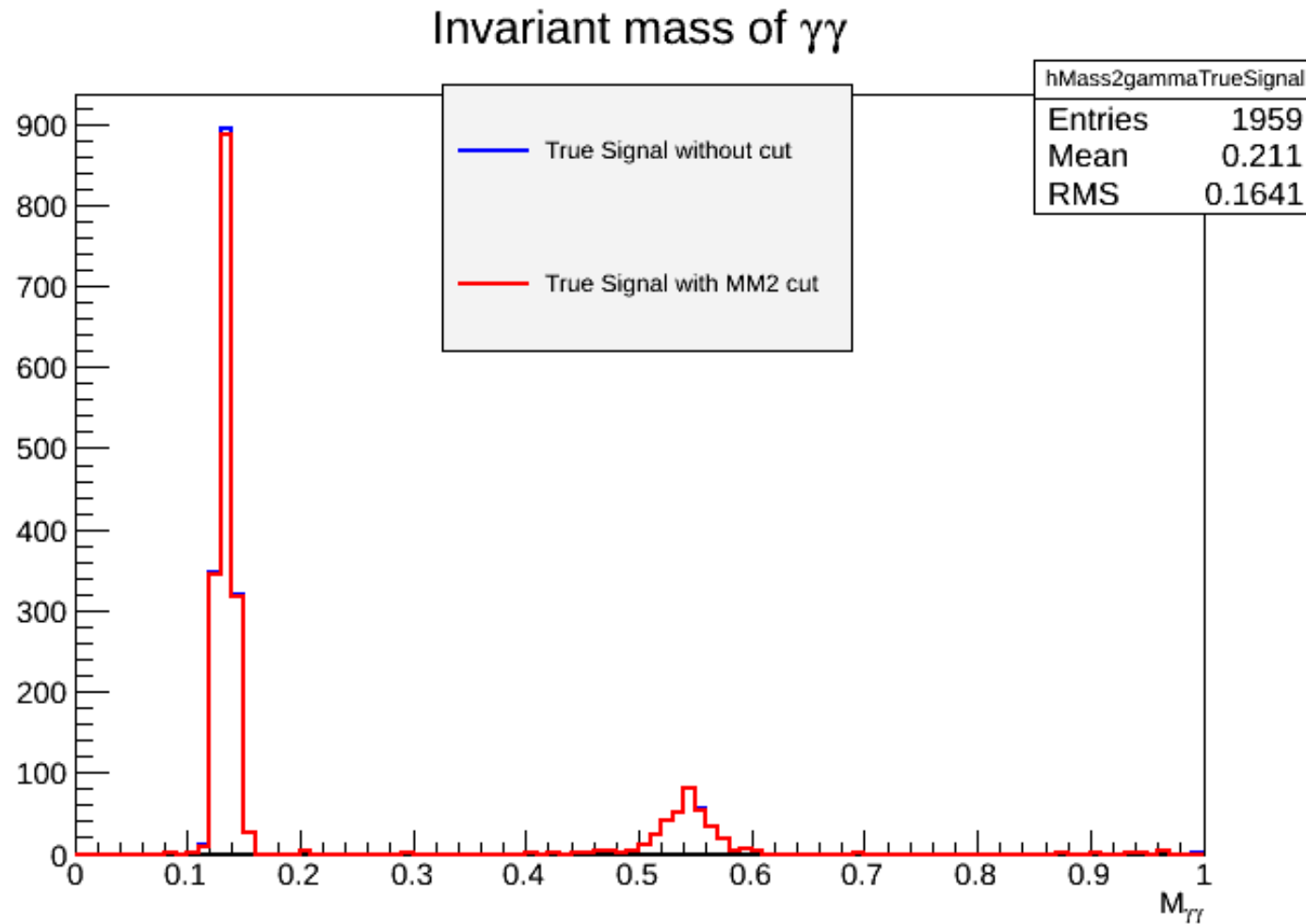
Drop on true signal due to delta phi cut



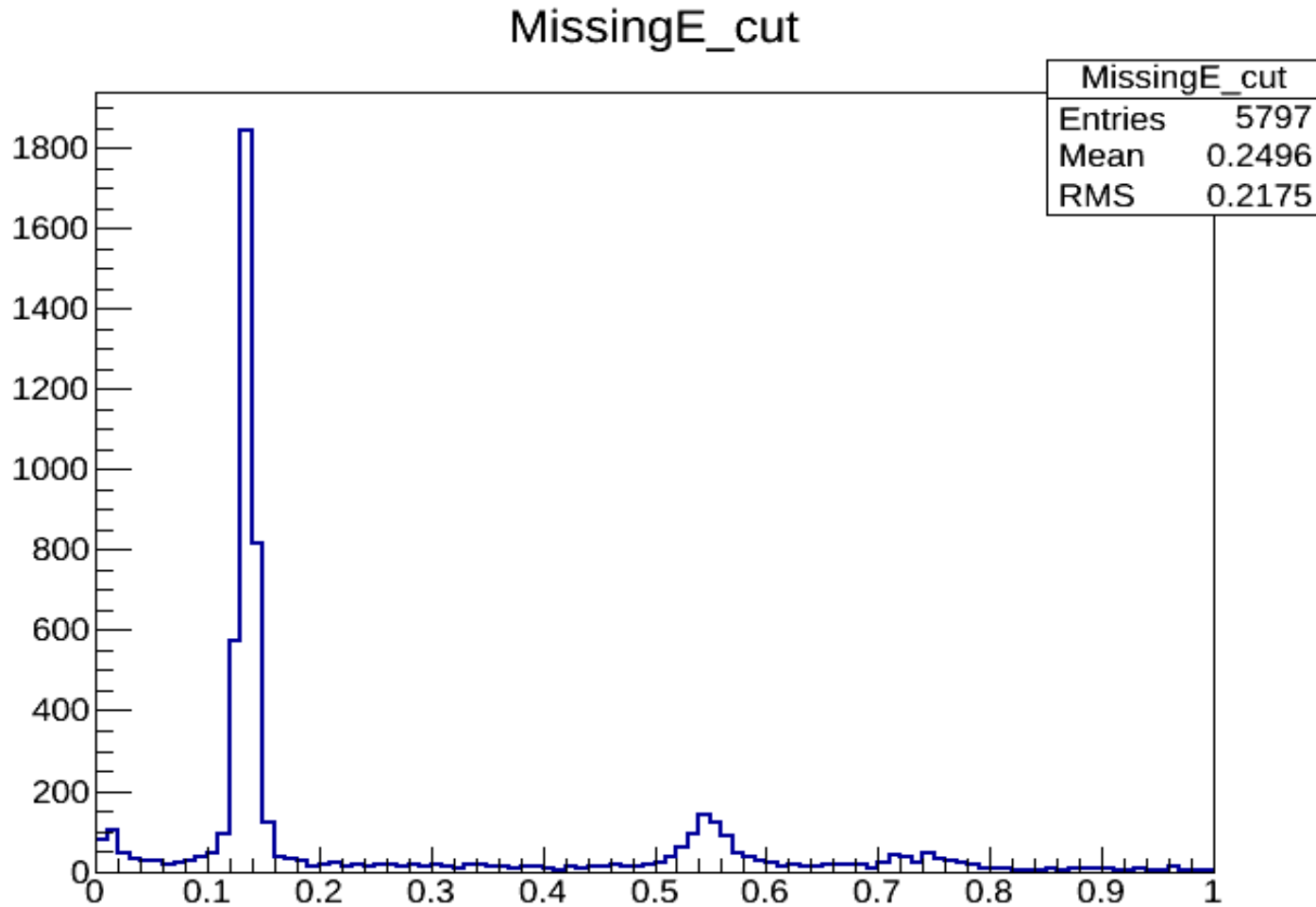
Missing mass squared cut [-0.05, 0.025] GeV



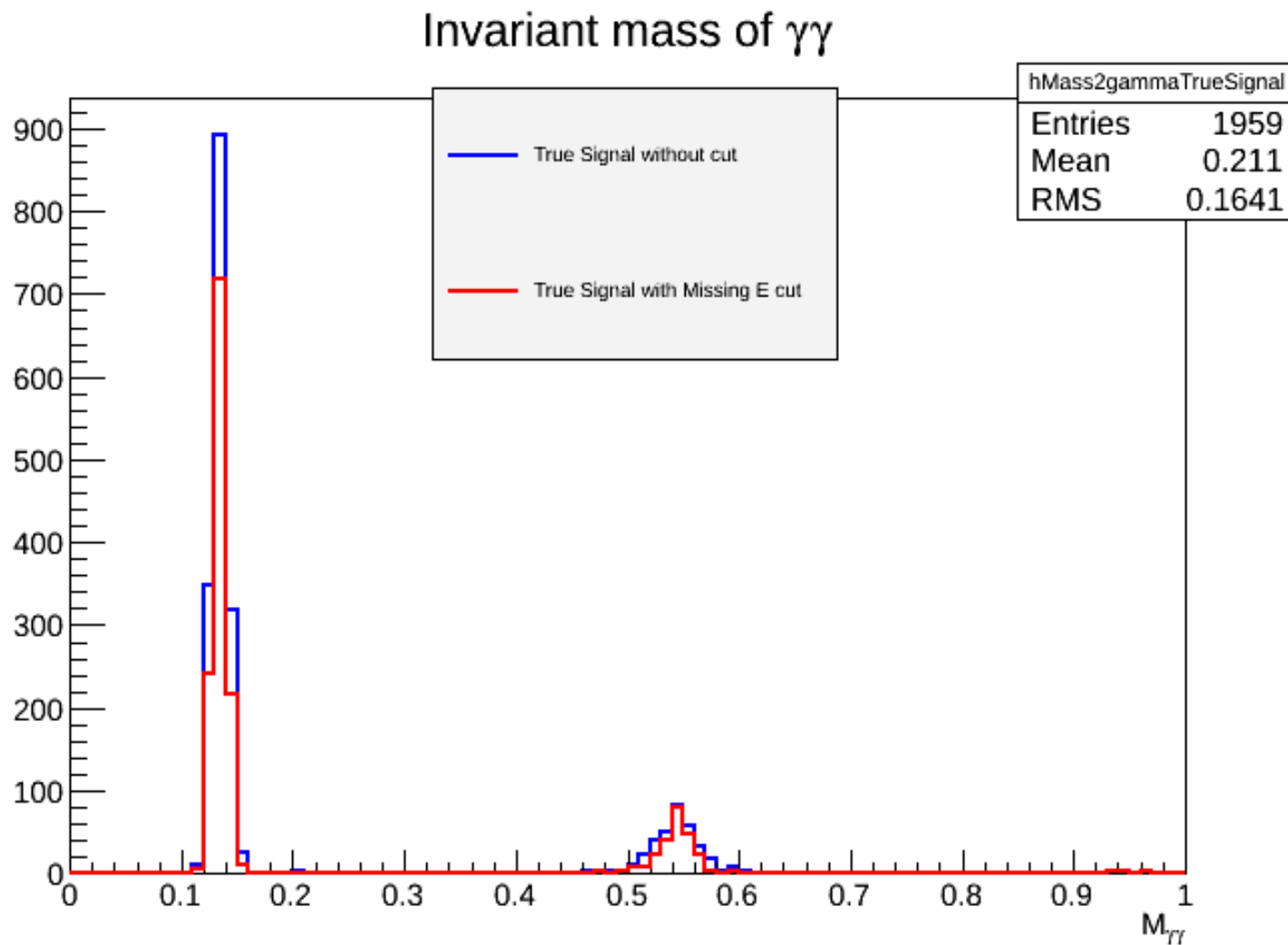
Drop on true signal due to missing Mass squared cut



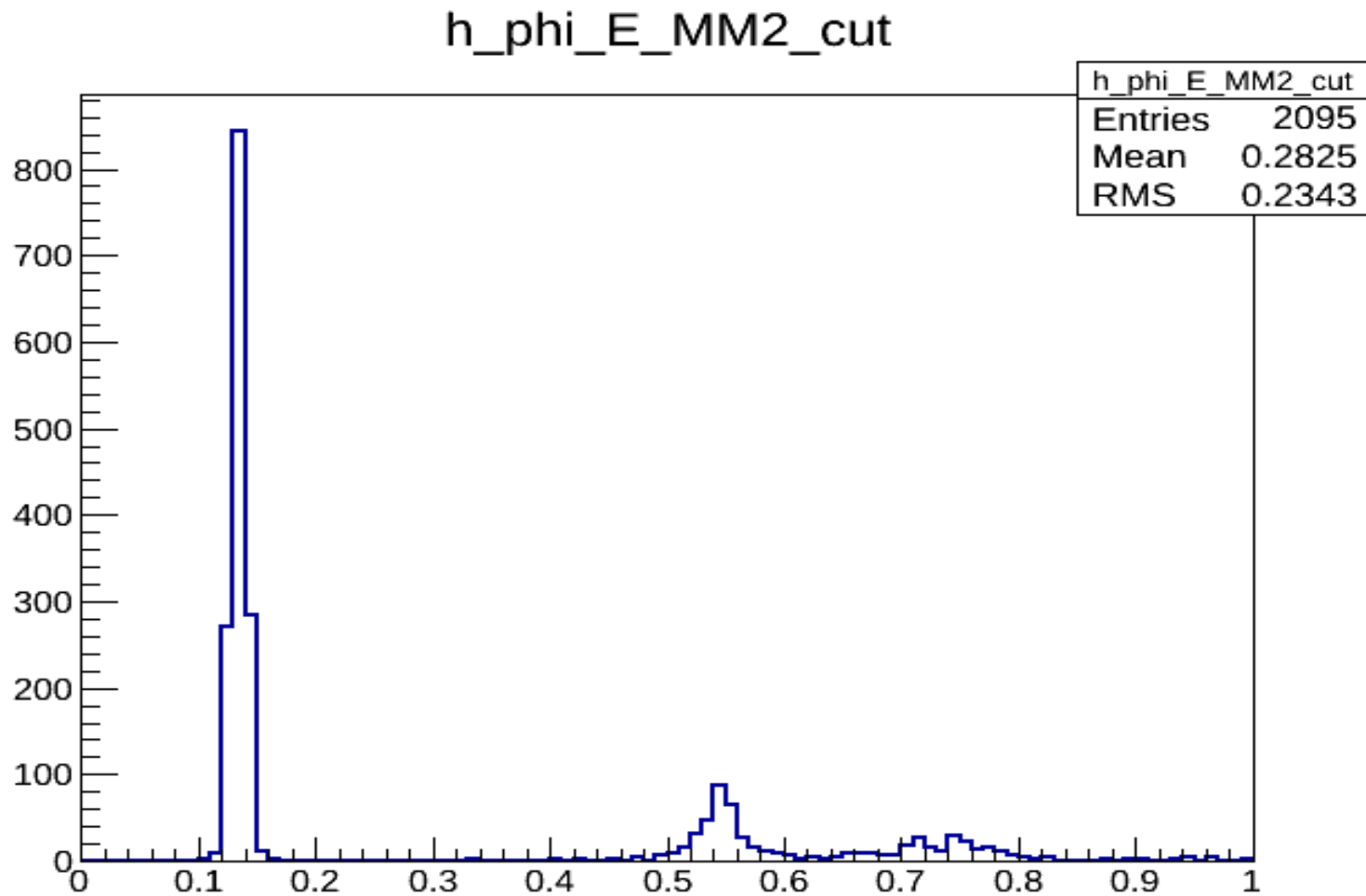
Missing energy cut [-0.25, 0.25] GeV



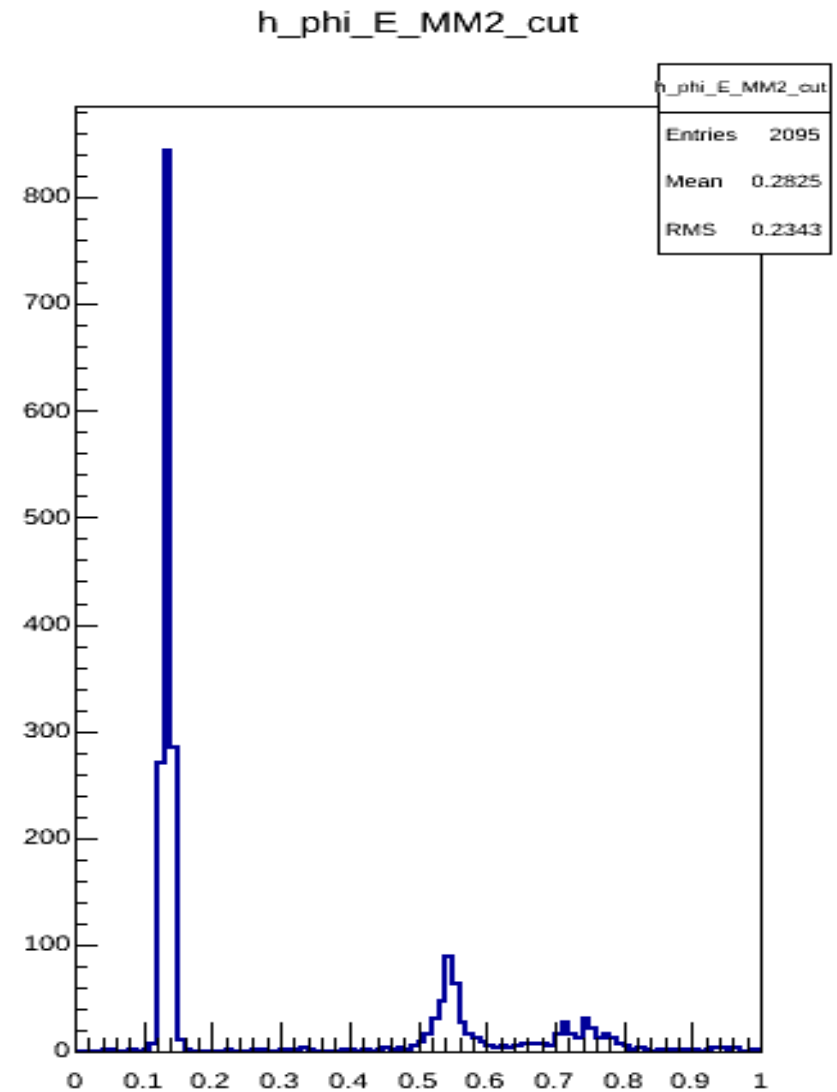
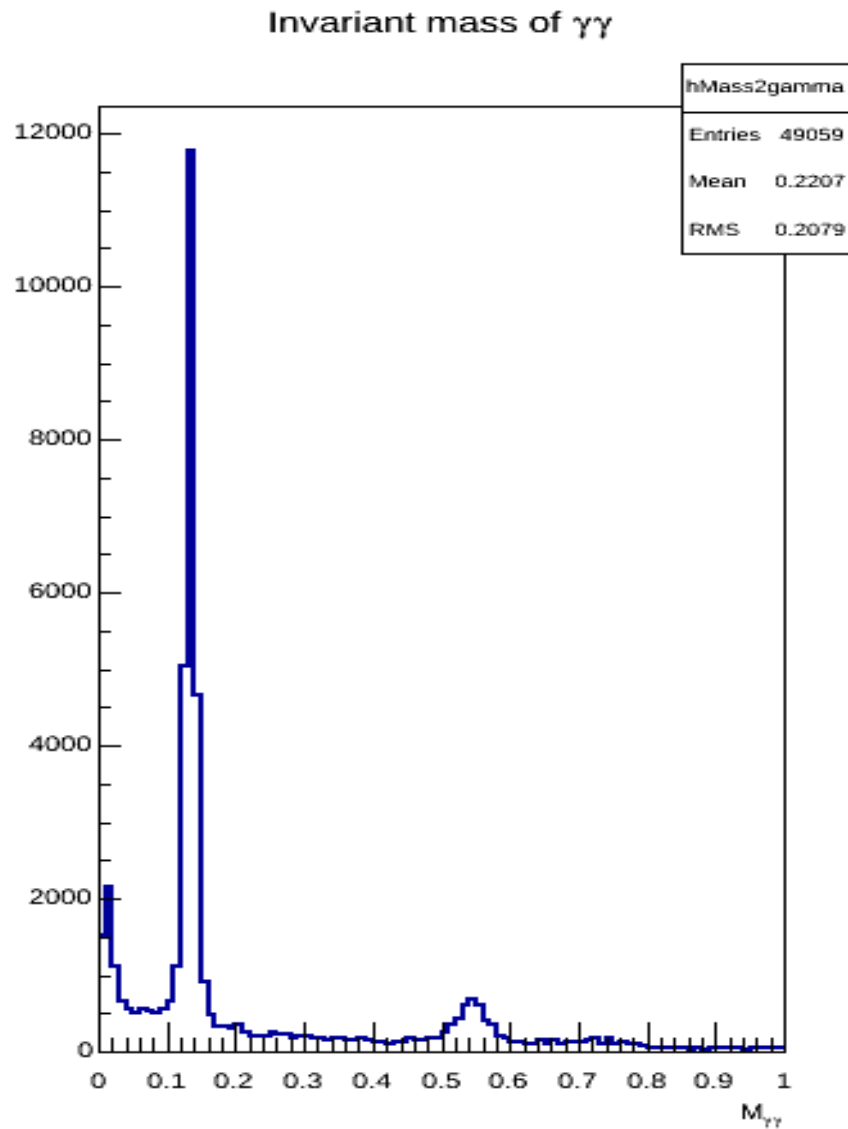
Drop on true signal after missing energy cut [-0.25, 0.25] GeV



Mass distribution of two photons after applying above cuts

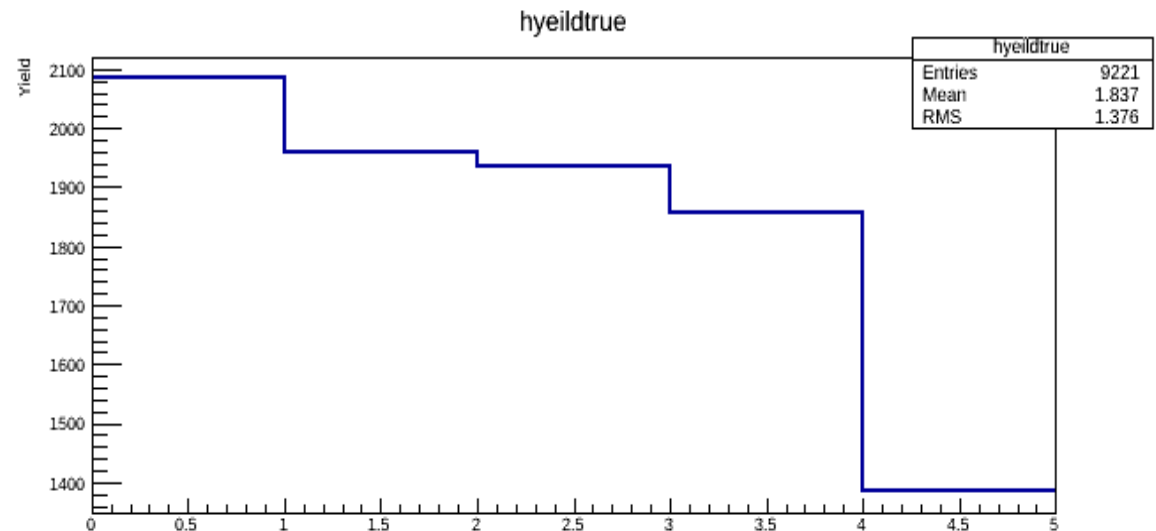
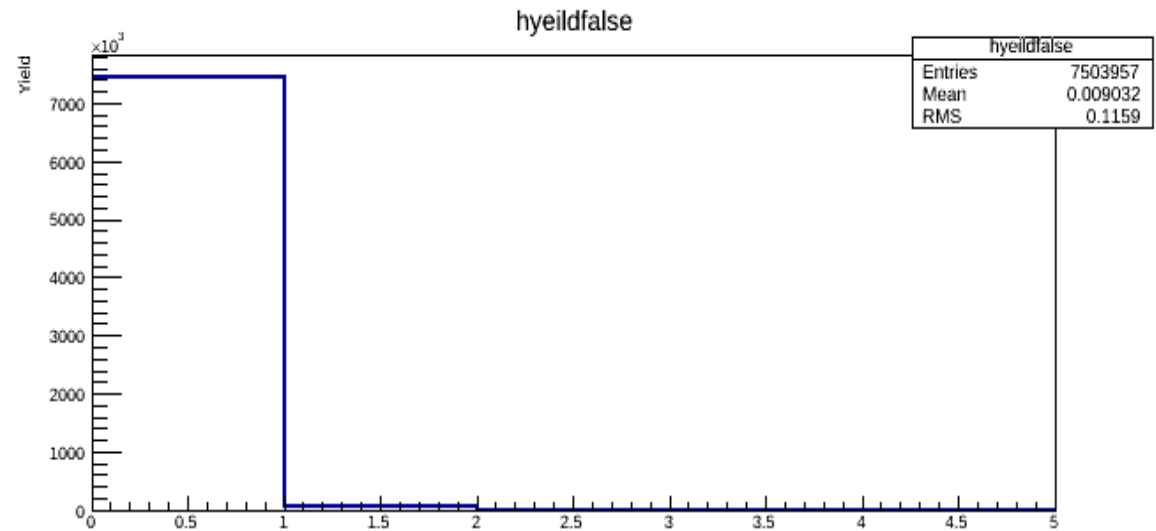


Mass distribution of two reconstructed photons before and after cuts

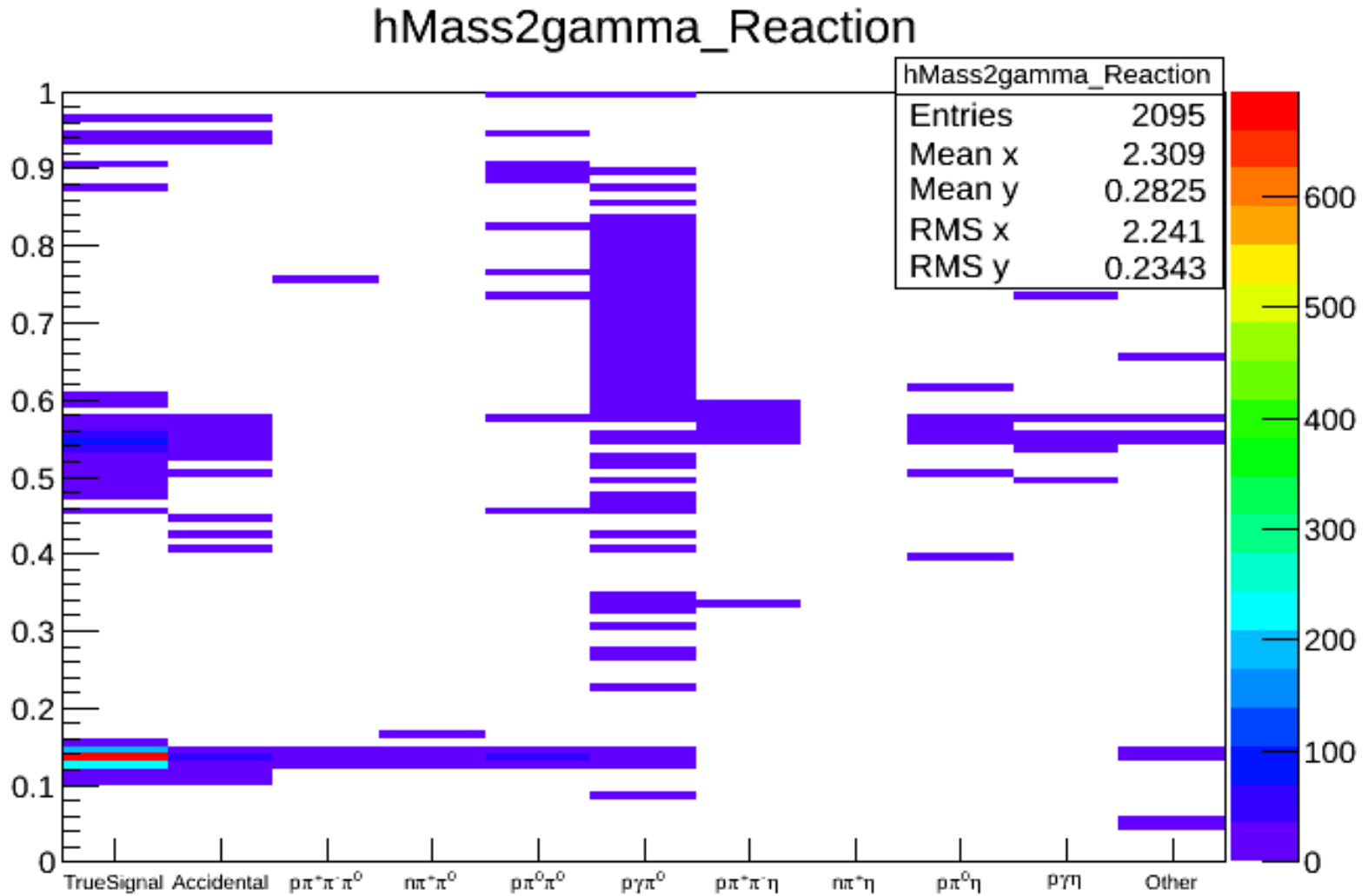


Yield plot after various cuts

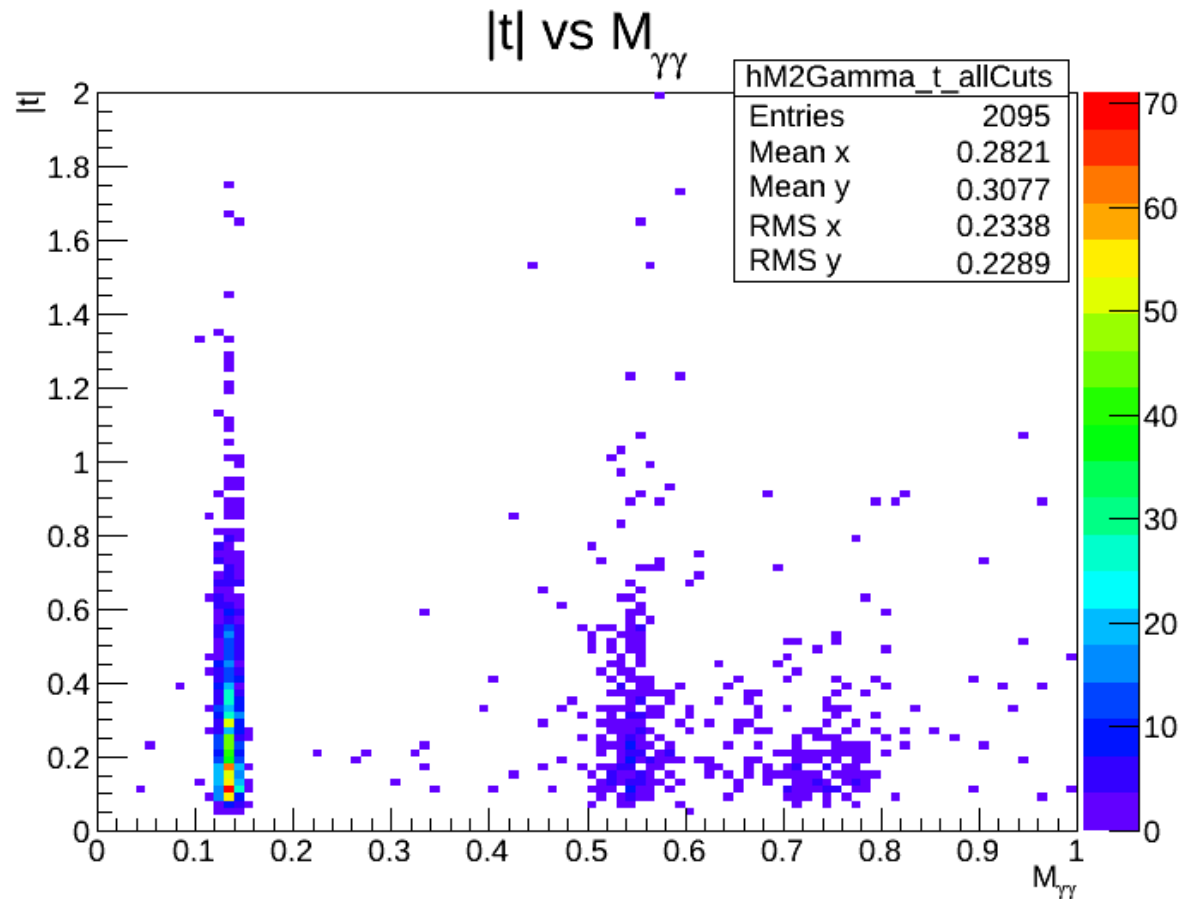
- All signal
- Beam Energy $>6\text{GeV}$ and Unused Energy $< 0.5\text{ Gev}$
- Missing Mass Squared $[-0.05, 0.025]$
- Delta Phi $[-5.0, 5.0]$
- Missing Energy $[-0.25, 0.25]$



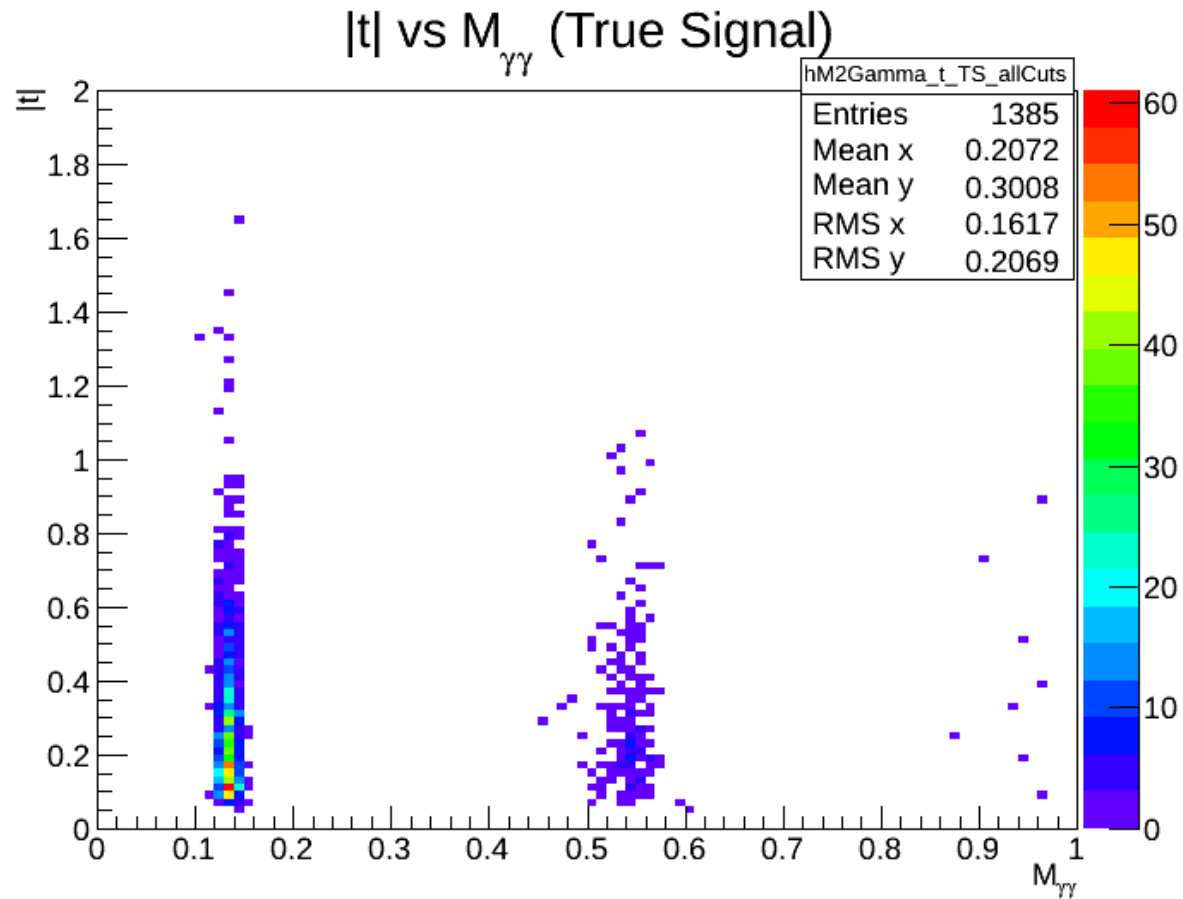
Mass distribution for various final states



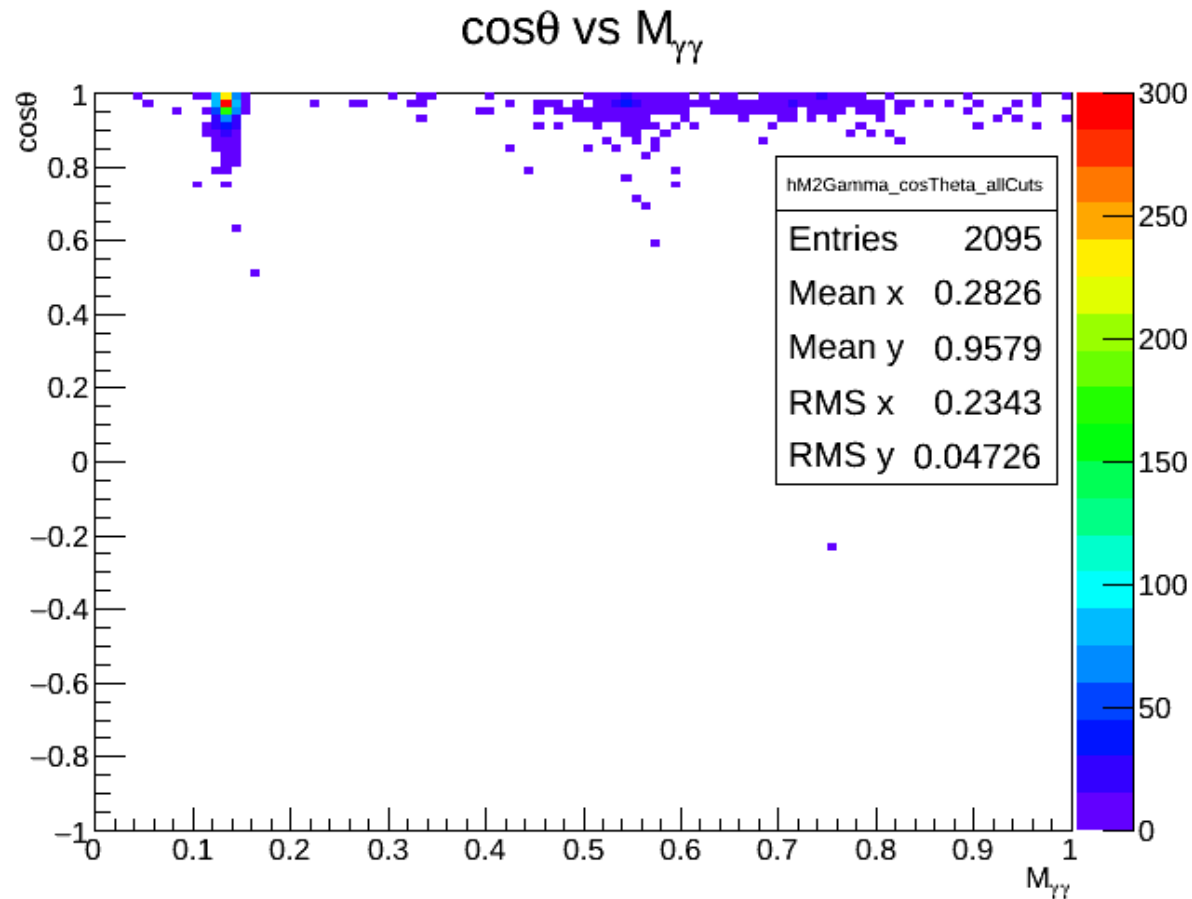
$|t|$ vs Mass of two photons distribution for all signal after cuts



$|t|$ vs. Mass of two photons for True signal satisfying cuts



Cos(Θ) Vs. Mass of two photons for all signal satisfying cuts



Cos(Θ) Vs. Mass of two photons for True signal satisfying cuts

