

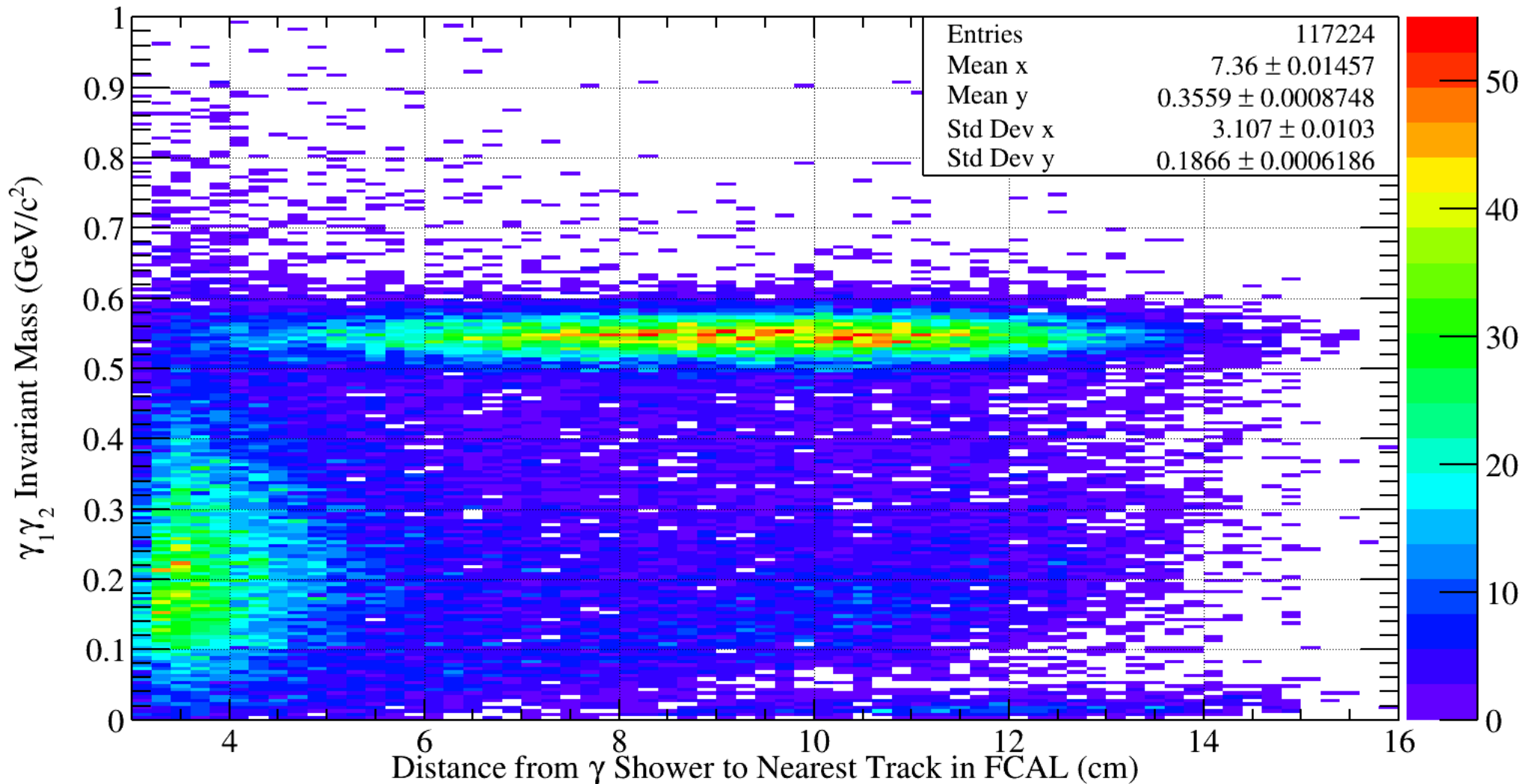
FCAL DOCA Cut Study to Eliminate Secondary Photons

Procedure:

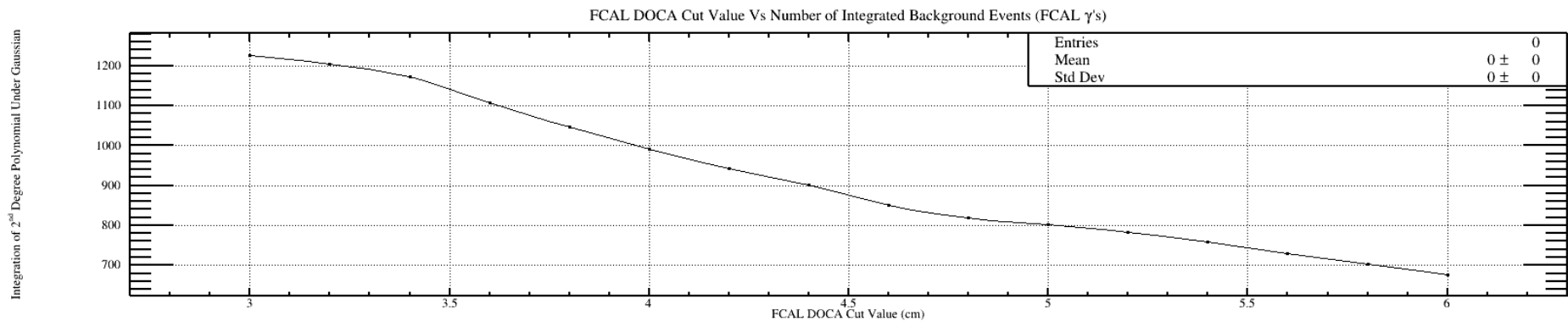
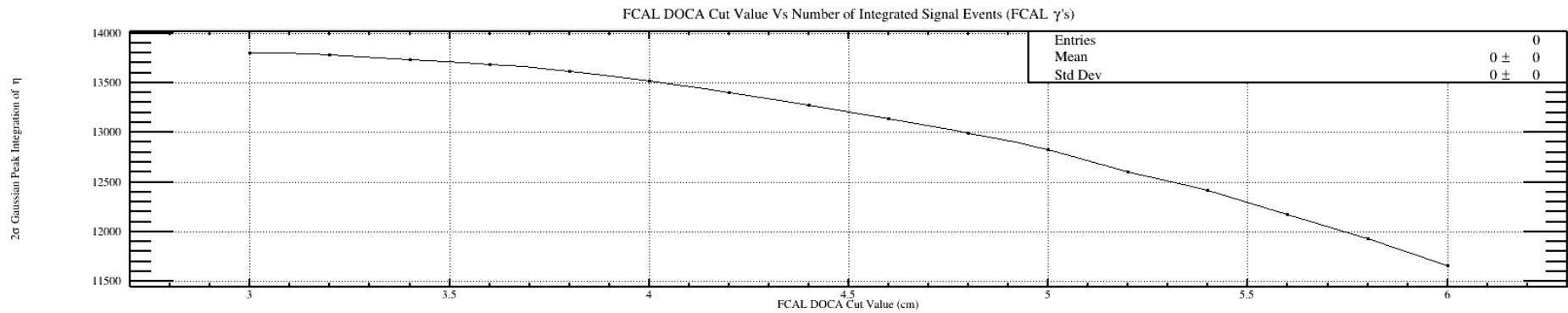
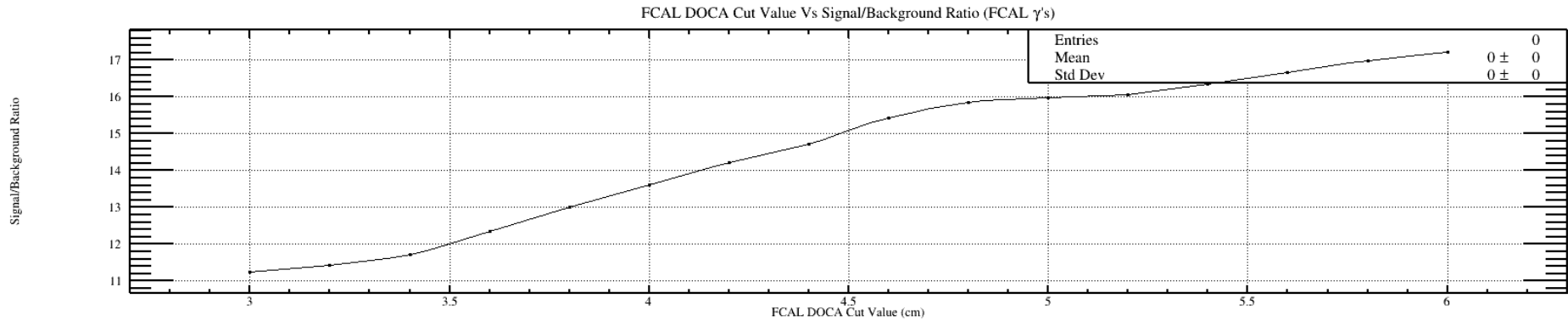
- Loop over FCAL DOCA cut values from FCAL DOCA > 3.0 cm to FCAL DOCA > 6.0 cm in steps of 0.2 cm.
- Project Data onto $\gamma_1 \gamma_2$ Invariant Mass and fit the Eta peak with a Gaussian plus a 2nd degree polynomial
- Integrate the fitted functions in the range ± 2 sigma from Eta peak to estimate the number of signal and background events
- Record how the number of signal/background events evolves for:
All photons that hit the FCAL, All events with more than two photons, All events with exactly two photons.

FCAL DOCA Vs Gamma1Gamma2 Invariant Mass

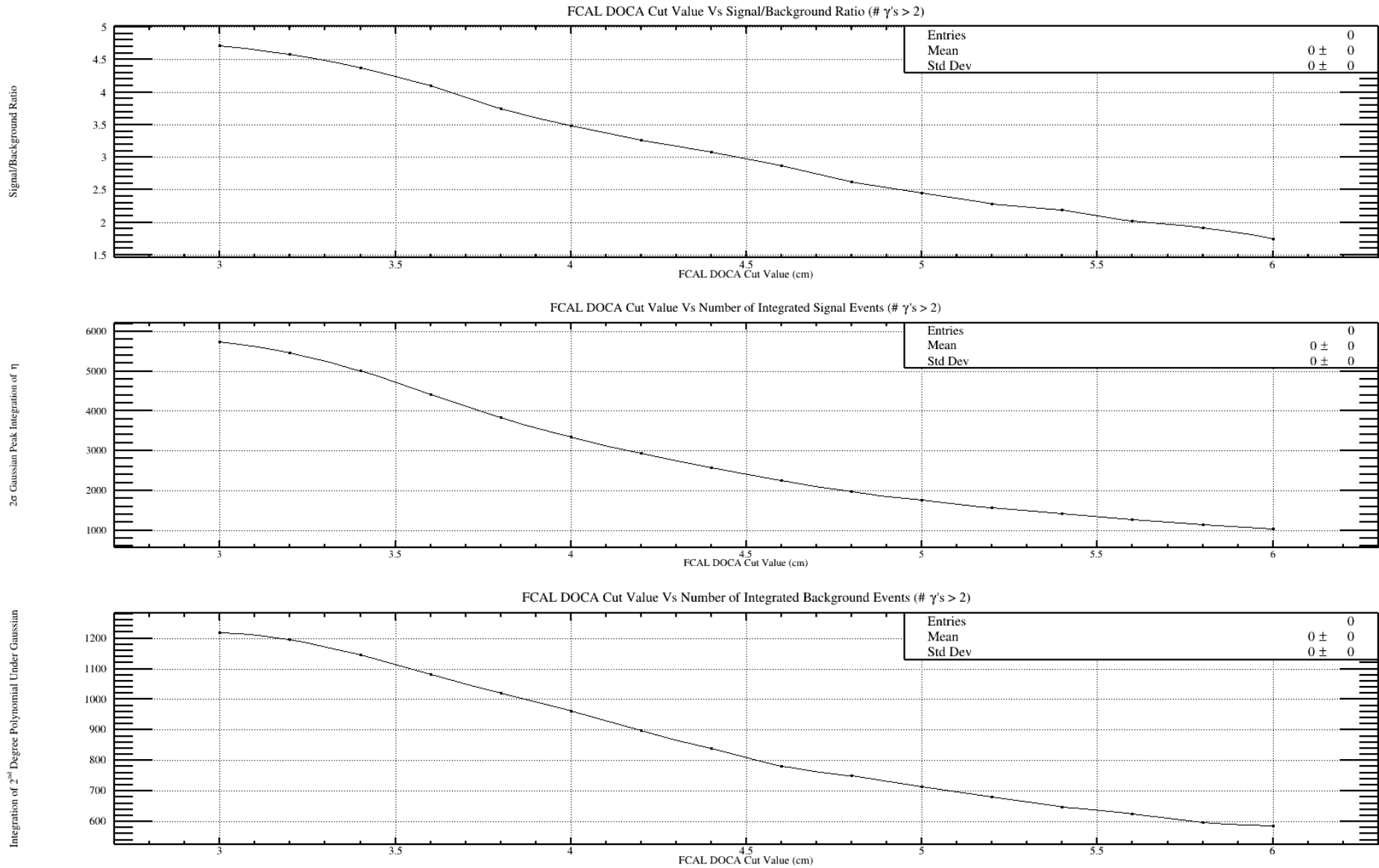
Distance from γ Shower to Nearest Track in FCAL Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's)



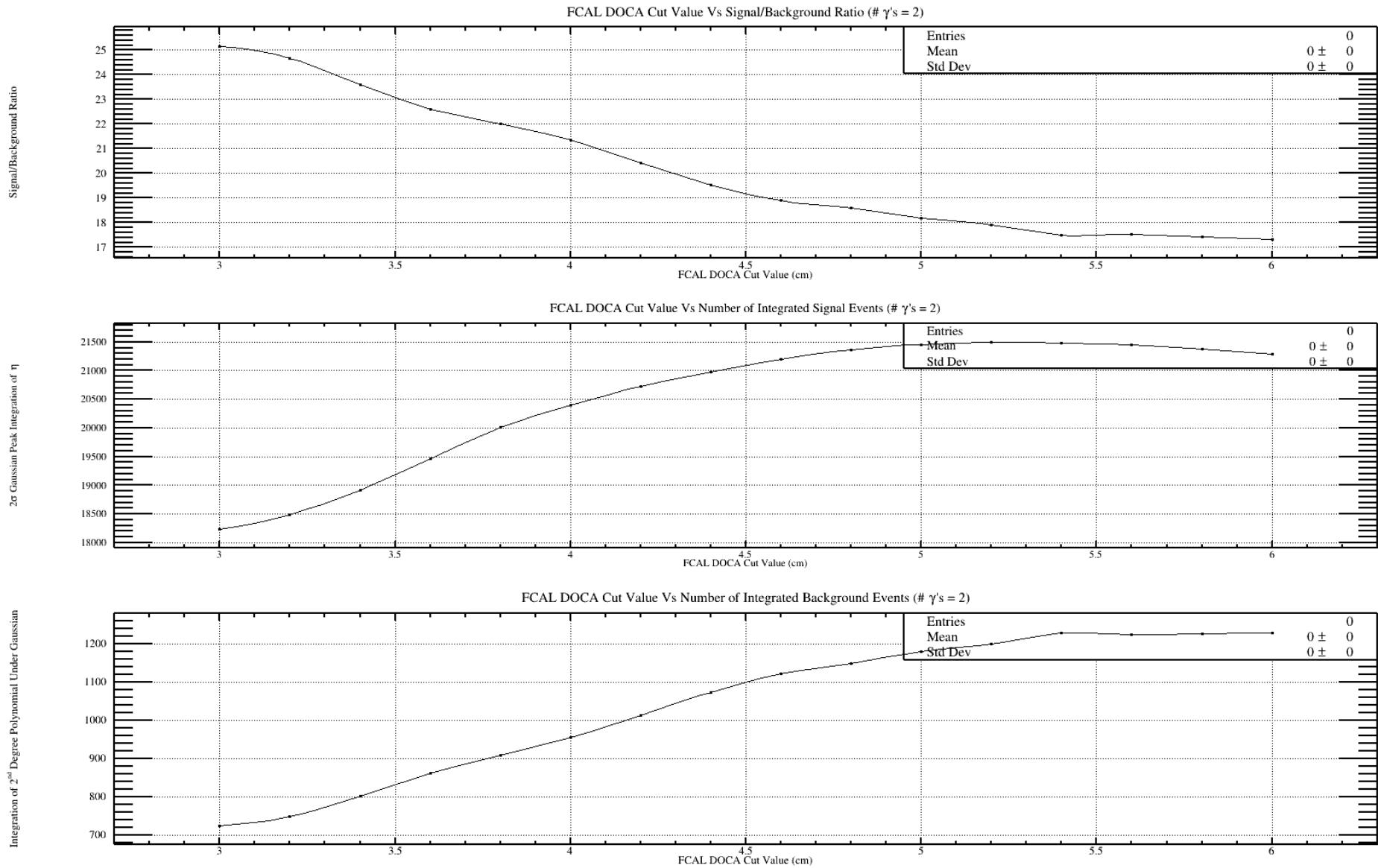
Number of Signal or BG events as a Function of FCAL DOCA Cut (All FCAL Gamma's)



Number of Signal or BG events as a Function of FCAL DOCA Cut (# Gamma's > 2)

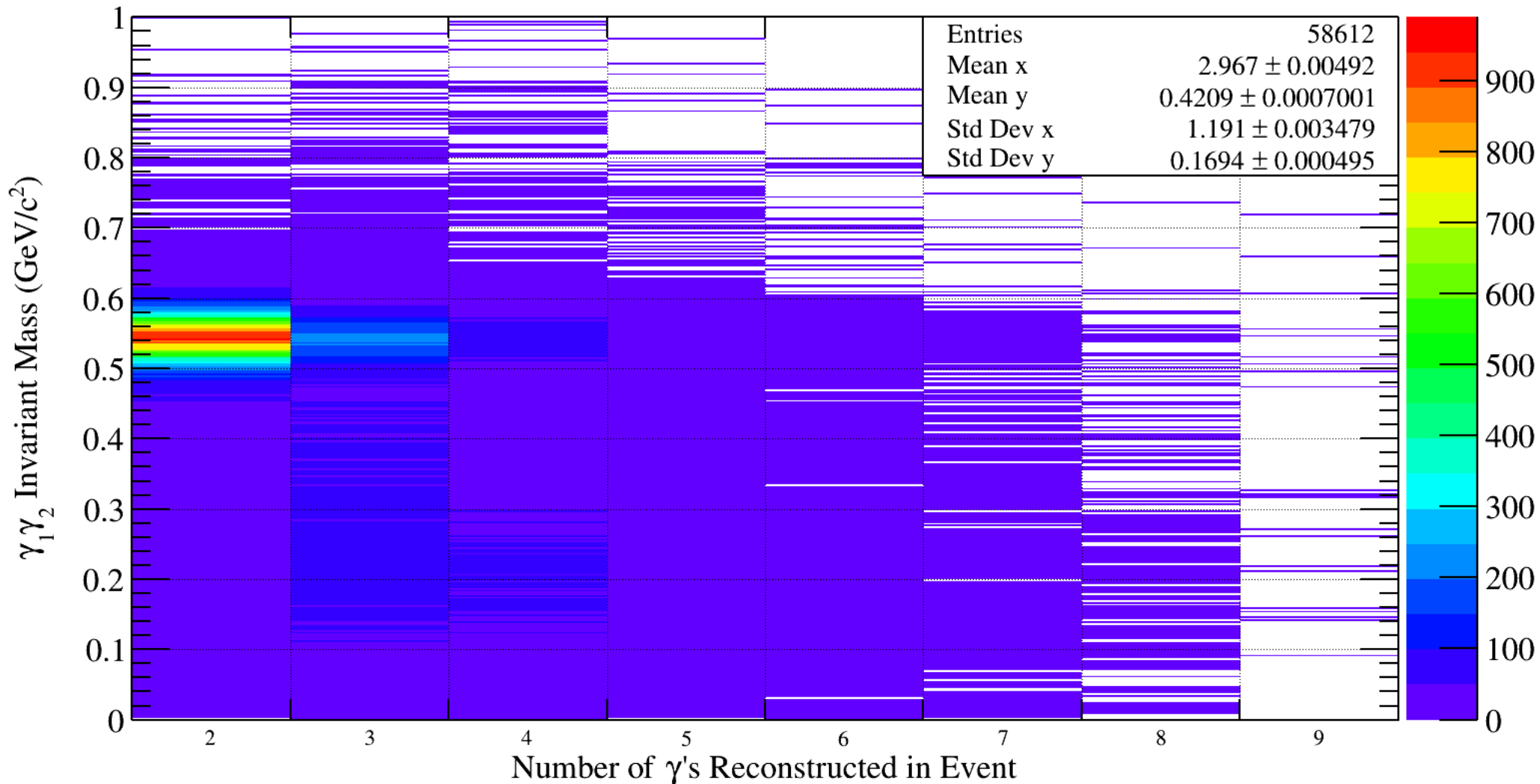


Number of Signal or BG events as a Function of FCAL DOCA Cut (# Gamma's = 2)



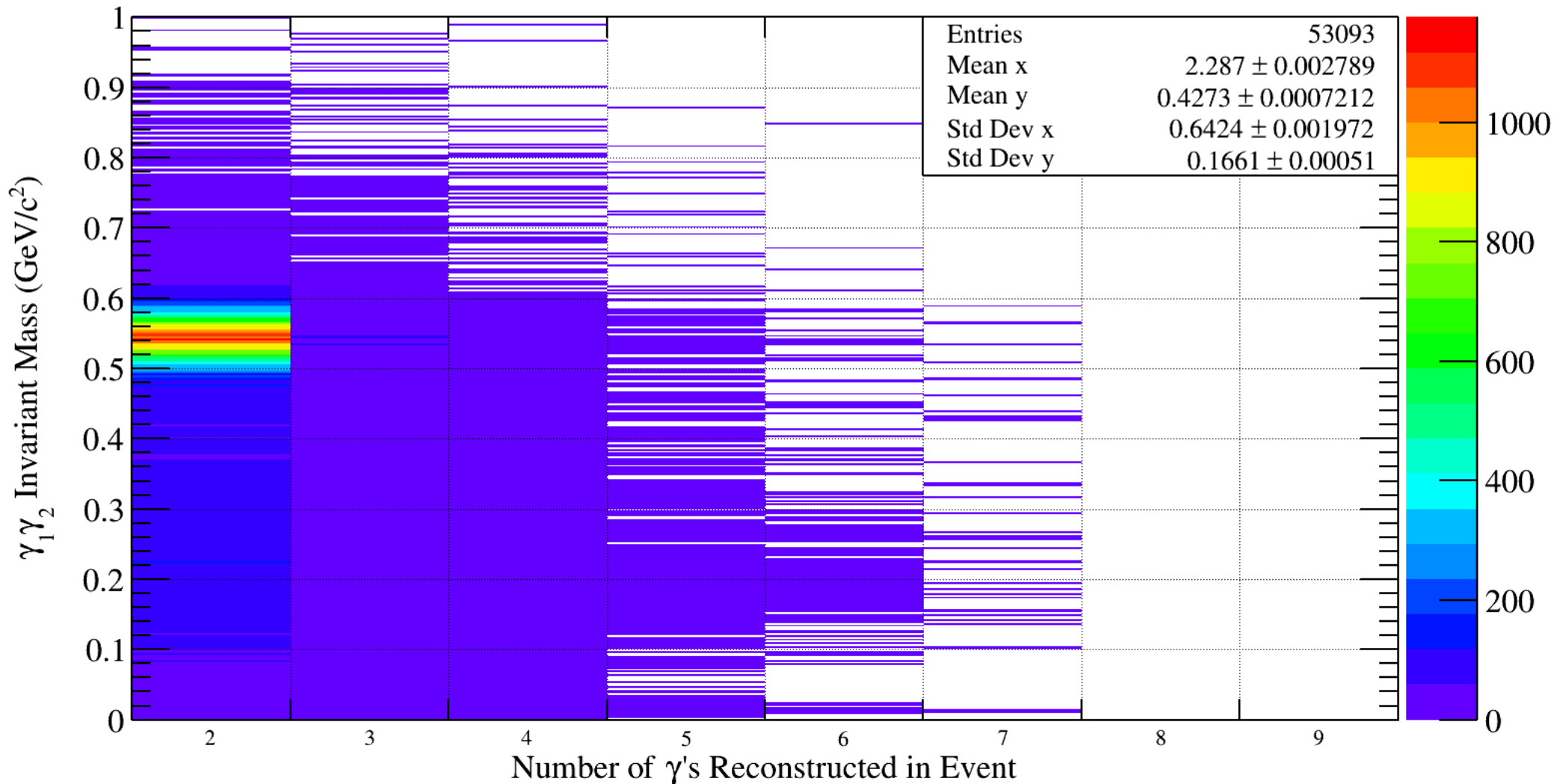
Number of Photons in Event Vs Gamma1Gamma2 Invariant Mass (DOCA Cut = 3)

Number of γ 's Reconstructed in Event Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's, FCAL DOCA > 3.0)



Number of Photons in Event Vs Gamma1Gamma2 Invariant Mass (DOCA Cut = 6)

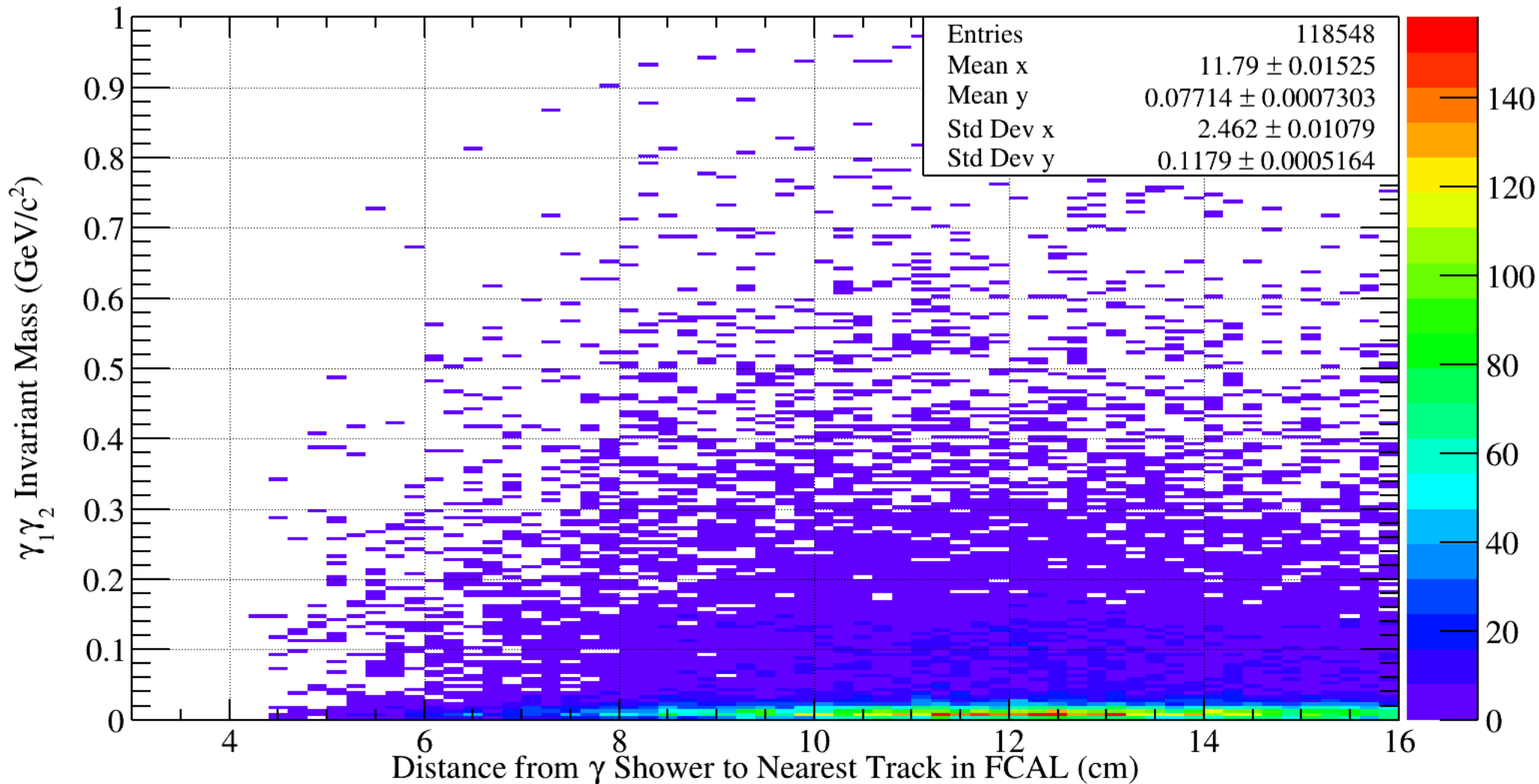
Number of γ 's Reconstructed in Event Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's, FCAL DOCA > 6.0)



Does the same behavior Manifest
itself in bggen?

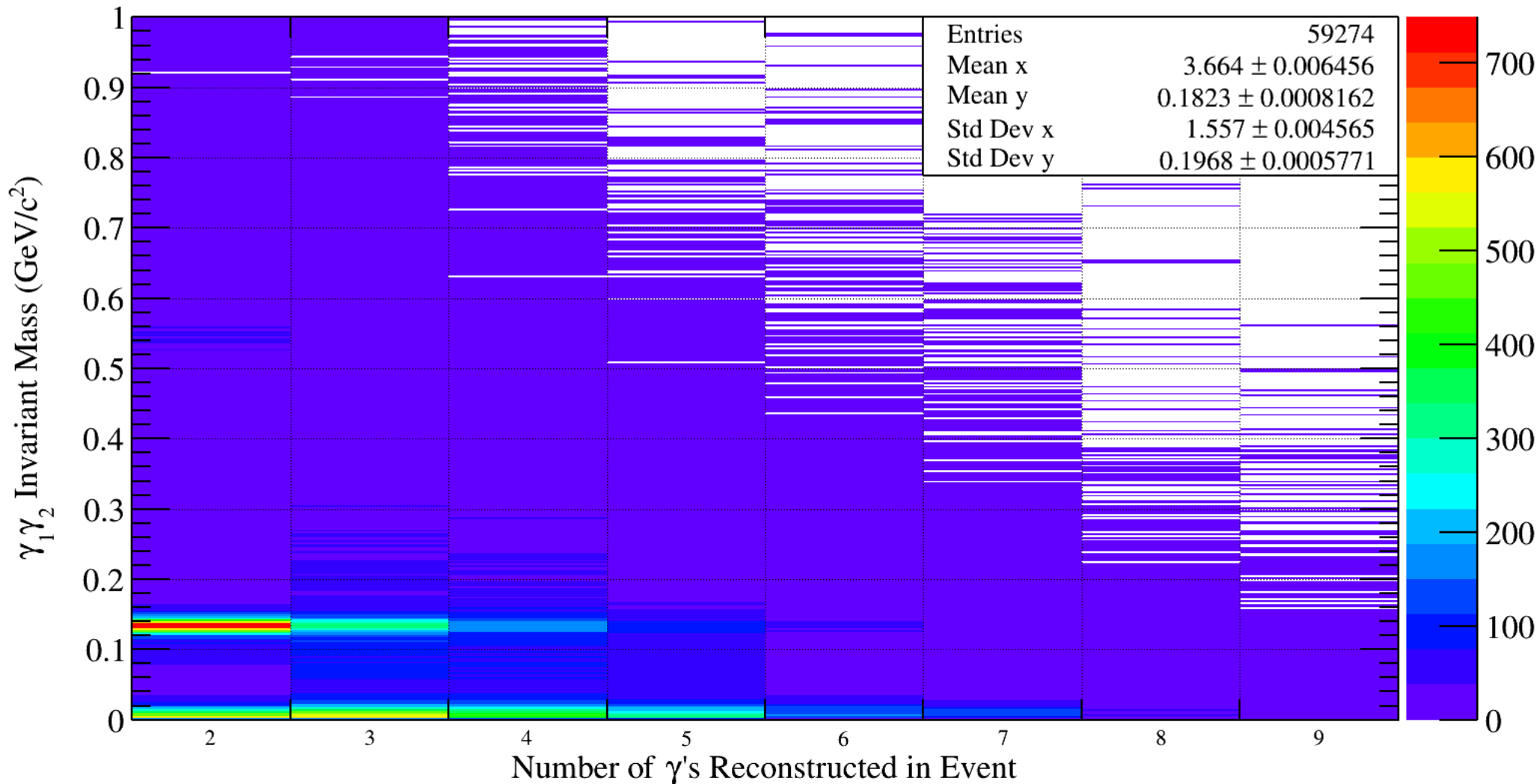
FCAL DOCA Vs Gamma1Gamma2 Invariant Mass (bggen)

Distance from γ Shower to Nearest Track in FCAL Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's)



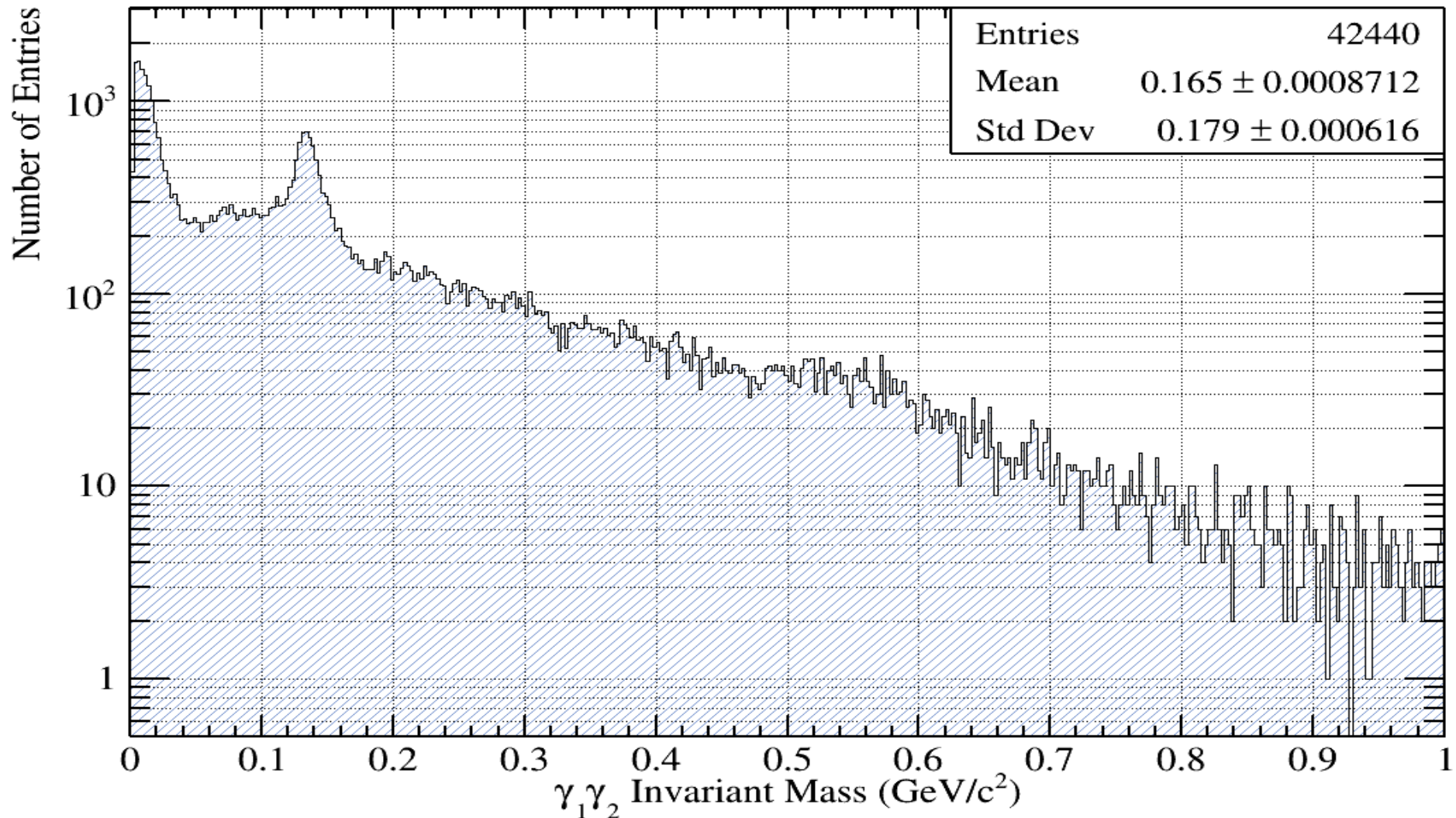
Number of Photons Vs Gamma1Gamma2 Invariant Mass (bggen)

Number of γ 's Reconstructed in Event Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's, FCAL DOCA > 3.0)



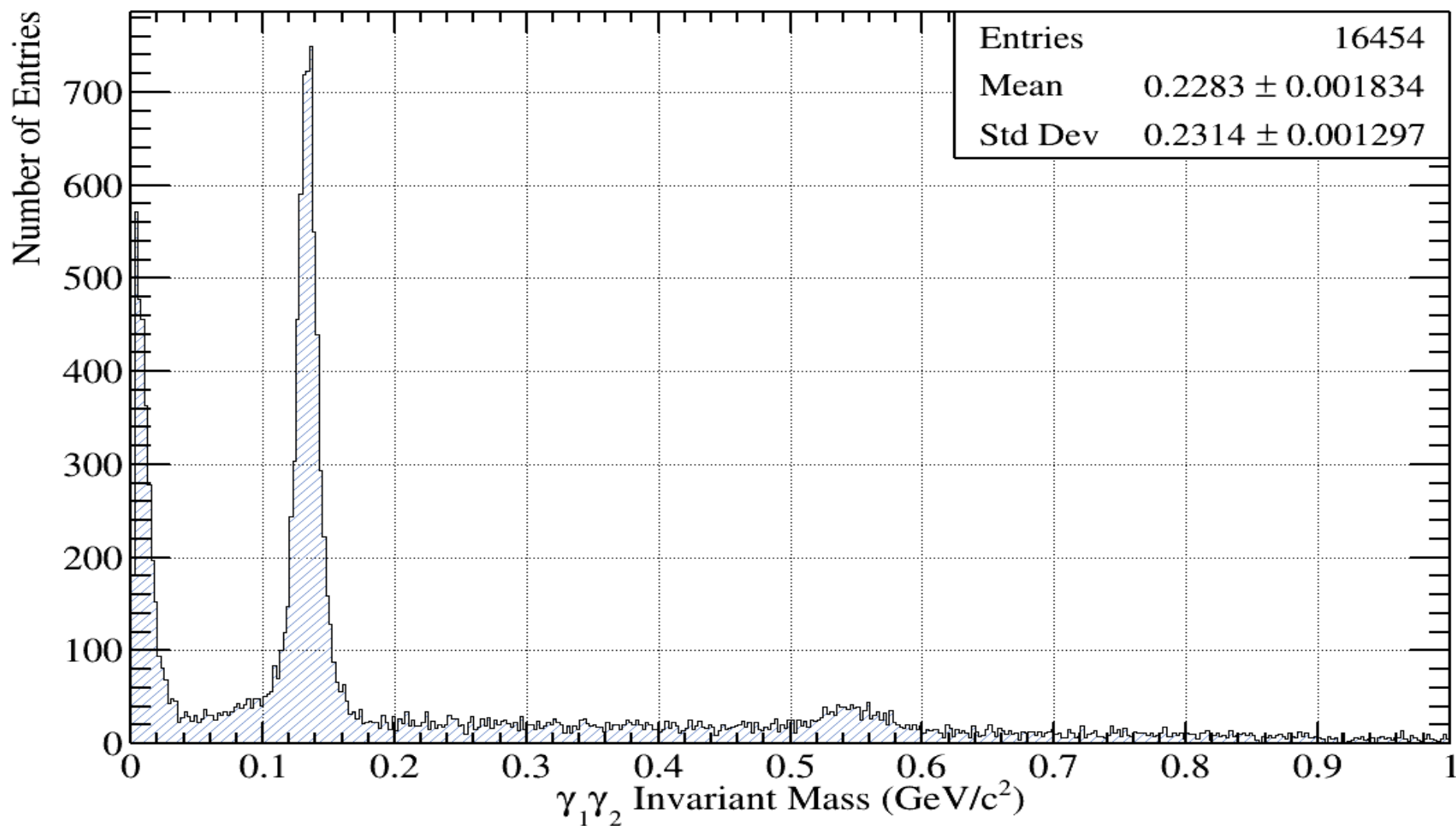
Gamma1Gamma2 Invariant Mass Projection (# Photon's > 2)

ProjectionY of binx=[2,8] [x=3.0..10.0] [3..9]



Gamma1Gamma2 Invariant Mass Projection (# Photon's = 2)

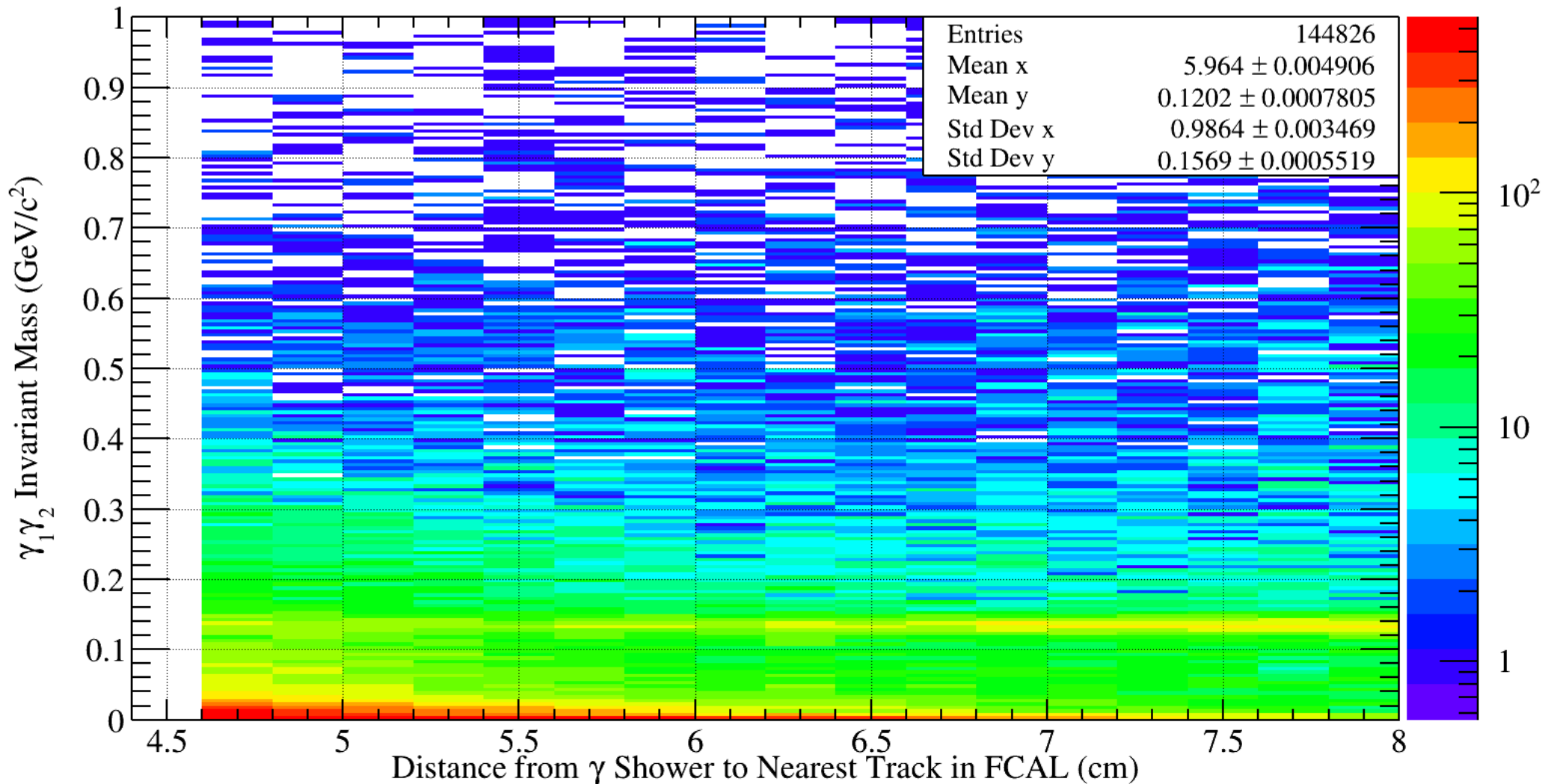
ProjectionY of binx=1 [x=2.0..3.0] [2]



Does the same behavior Manifest
itself in Data?

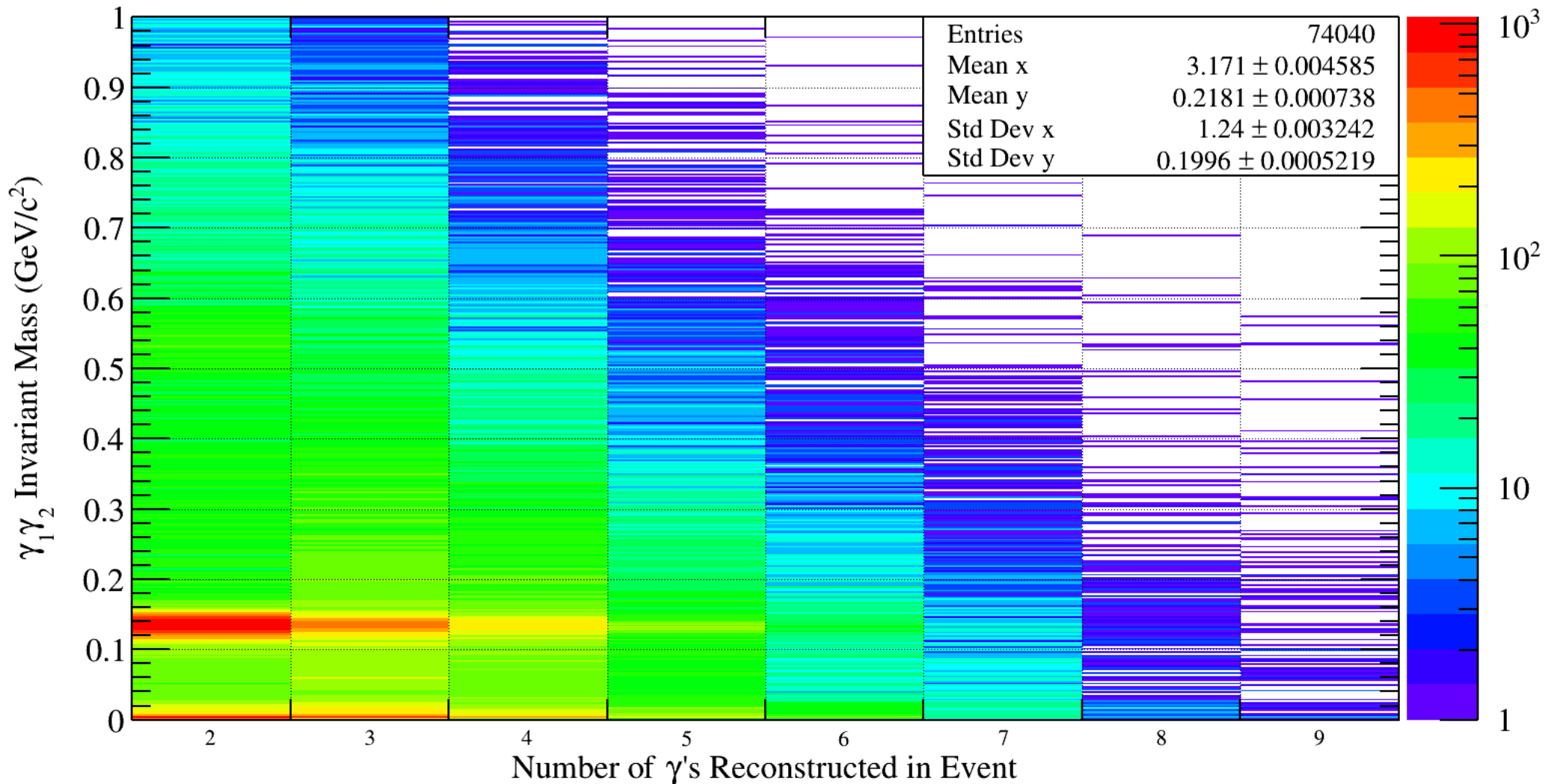
FCAL DOCA Vs $\gamma_1\gamma_2$ Invariant Mass (Data)

Distance from γ Shower to Nearest Track in FCAL Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's)

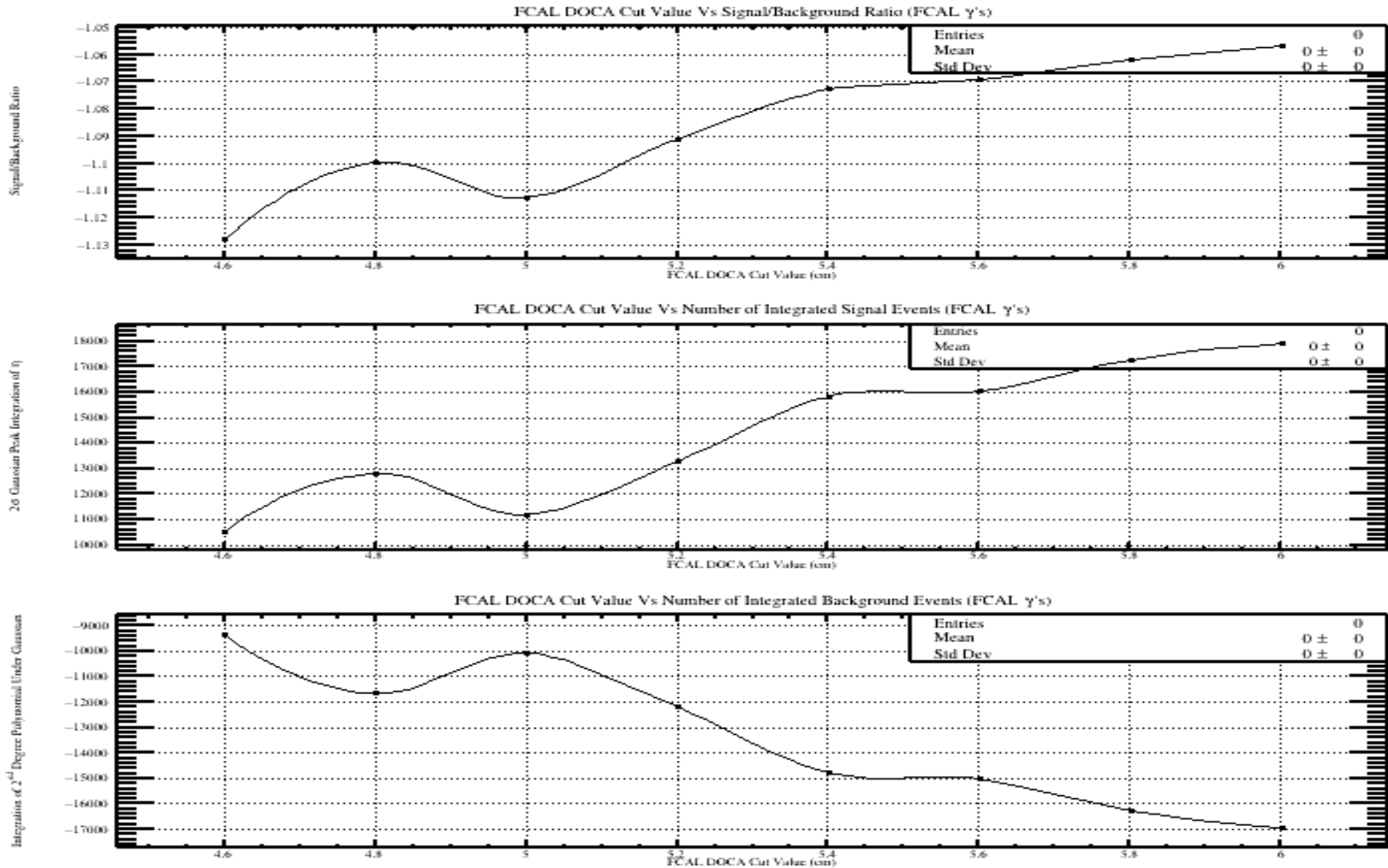


Number of Photons Vs Gamma1Gamma2 Invariant Mass (Data)

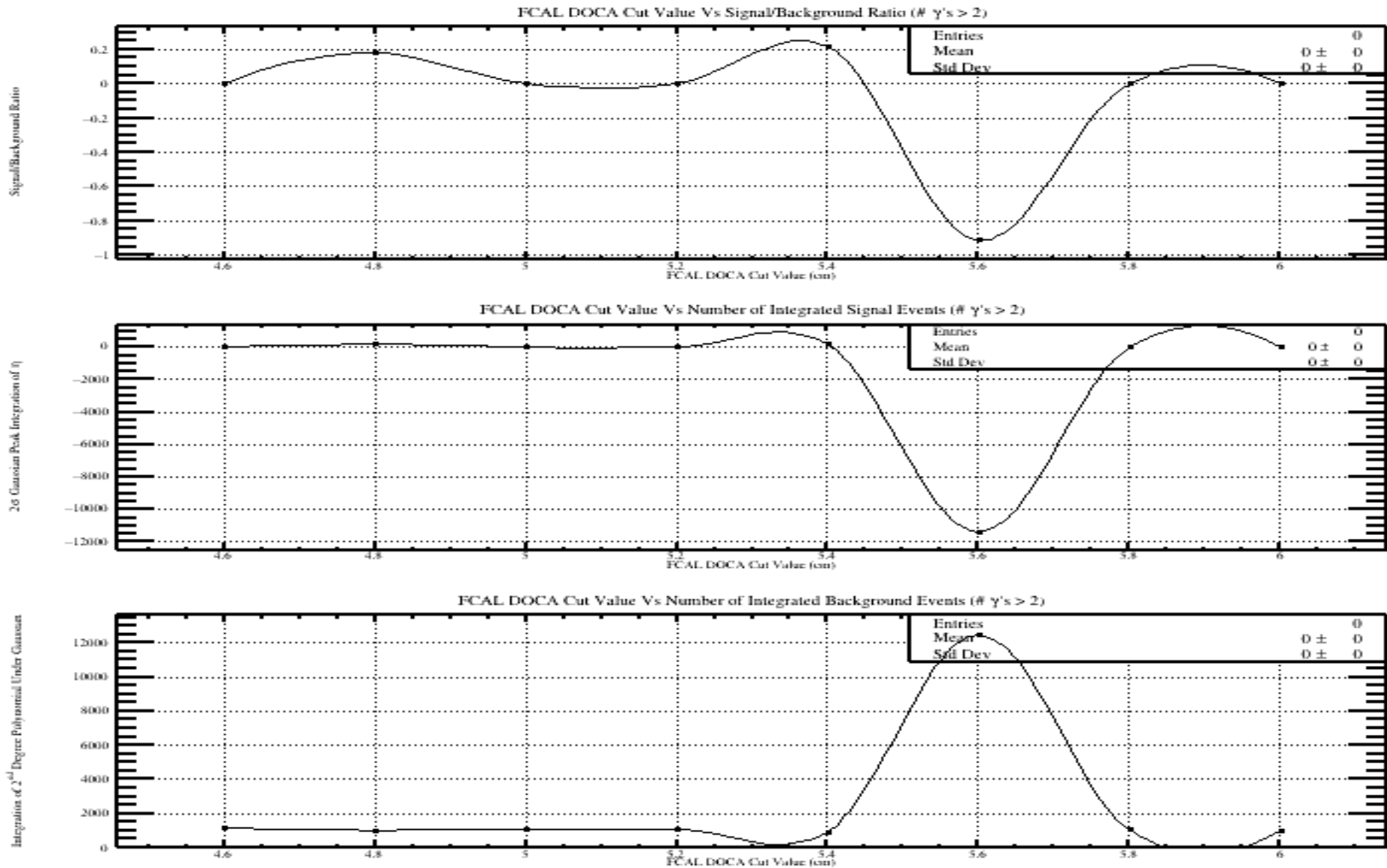
Number of γ 's Reconstructed in Event Vs $\gamma_1\gamma_2$ Invariant Mass (All γ 's, FCAL DOCA > 4.6)



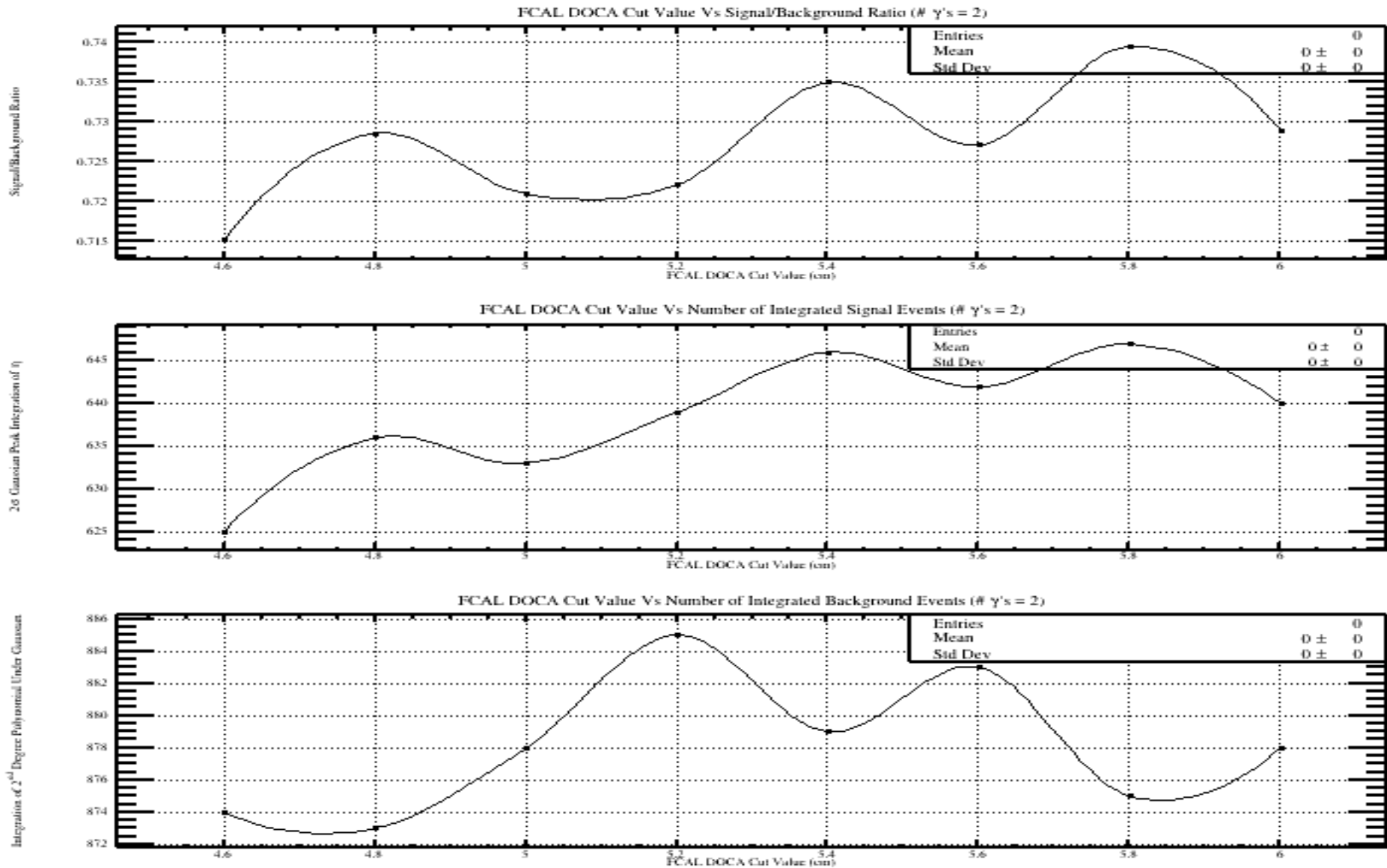
Number of Signal or BG events as a Function of FCAL DOCA Cut (All FCAL Gamma's)



Number of Signal or BG events as a Function of FCAL DOCA Cut (# Photon's > 2)

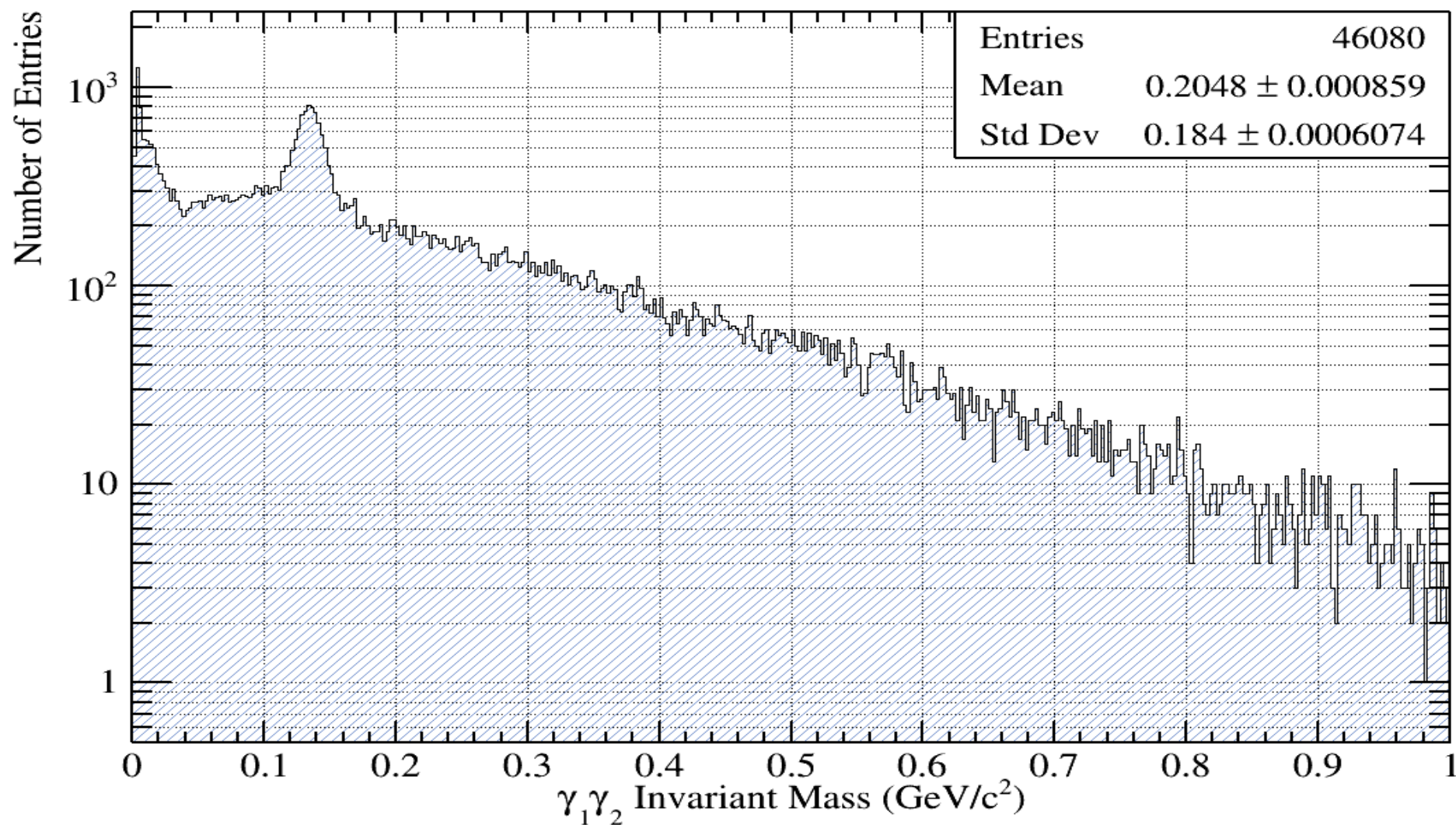


Number of Signal or BG events as a Function of FCAL DOCA Cut (# Photon's = 2)



Gamma1Gamma2 Invariant Mass Projection (# Photon's > 2)

Projection Y of binx=[2,8] [x=3.0..10.0] [3..9]



Gamma1Gamma2 Invariant Mass Projection (# Photon's = 2)

ProjectionY of binx=1 [x=2.0..3.0] [2]

