FCAL Update

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Estimate number of Pi0s at 5.5 GeV

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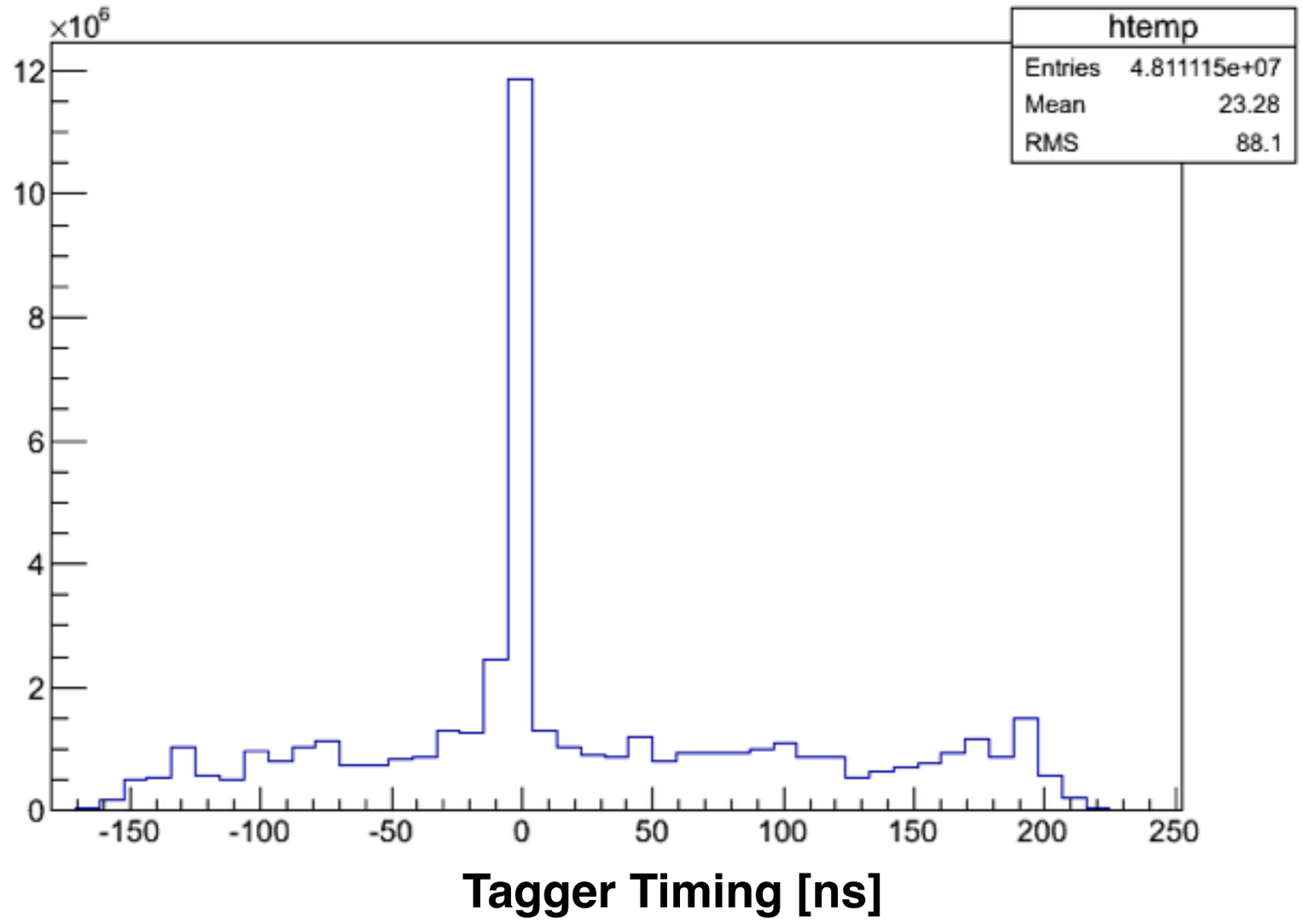
Tagger timing

Used DBeamPhoton class
- Includes both TAGH and TAGM
- Tagger timing cut: -10ns <t < 10ns



Invariant Mass vs. Photon Energy

Cuts Used:

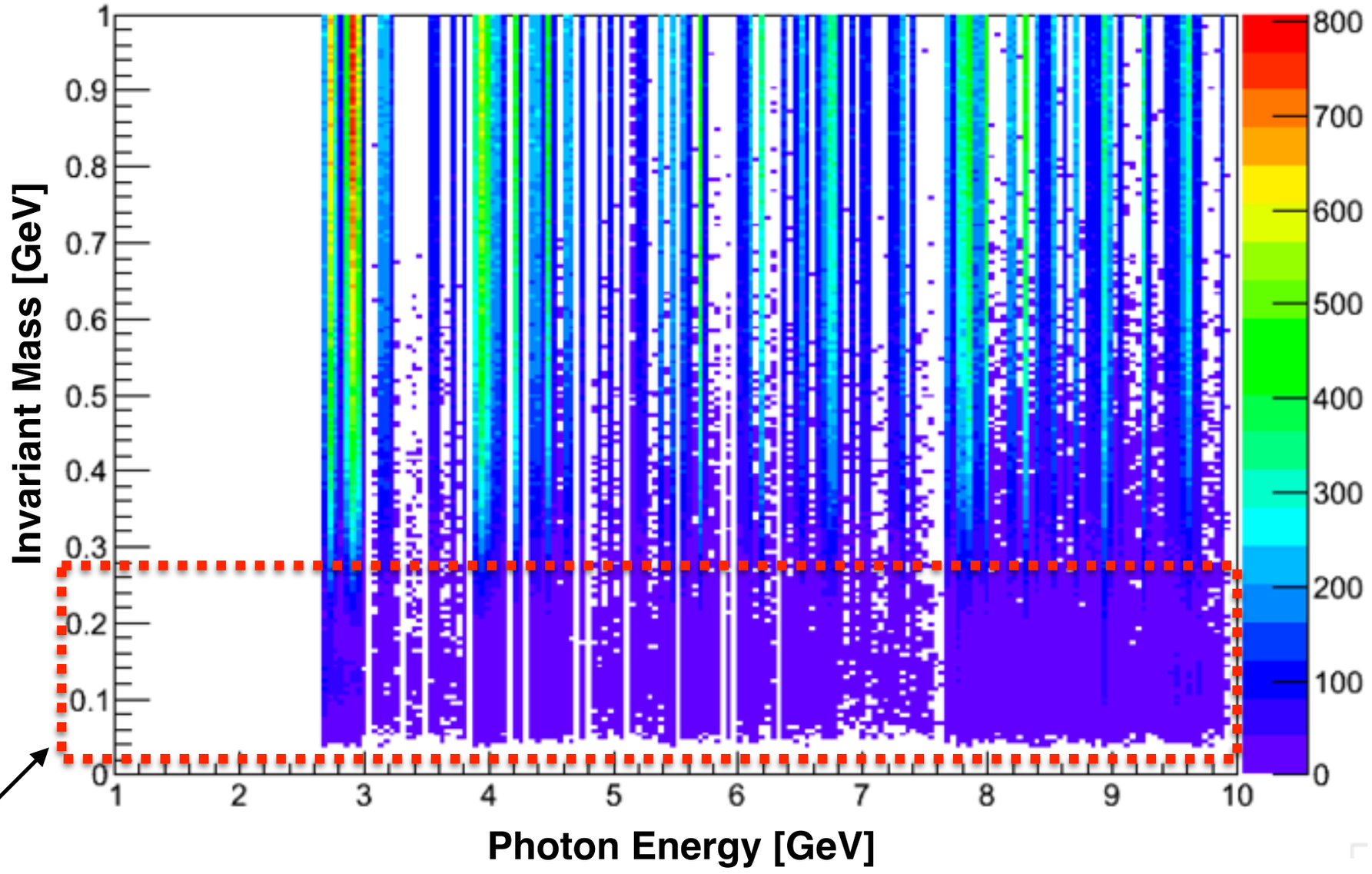
Tagger timing:
-10 ns < t < 10 ns

Tagger energy > 1 GeV

FCAL cluster radius > 20 cm from the beamline

FCAL lower cluster energy > 1 GeV

FCAL cluster timing difference < 10 ns



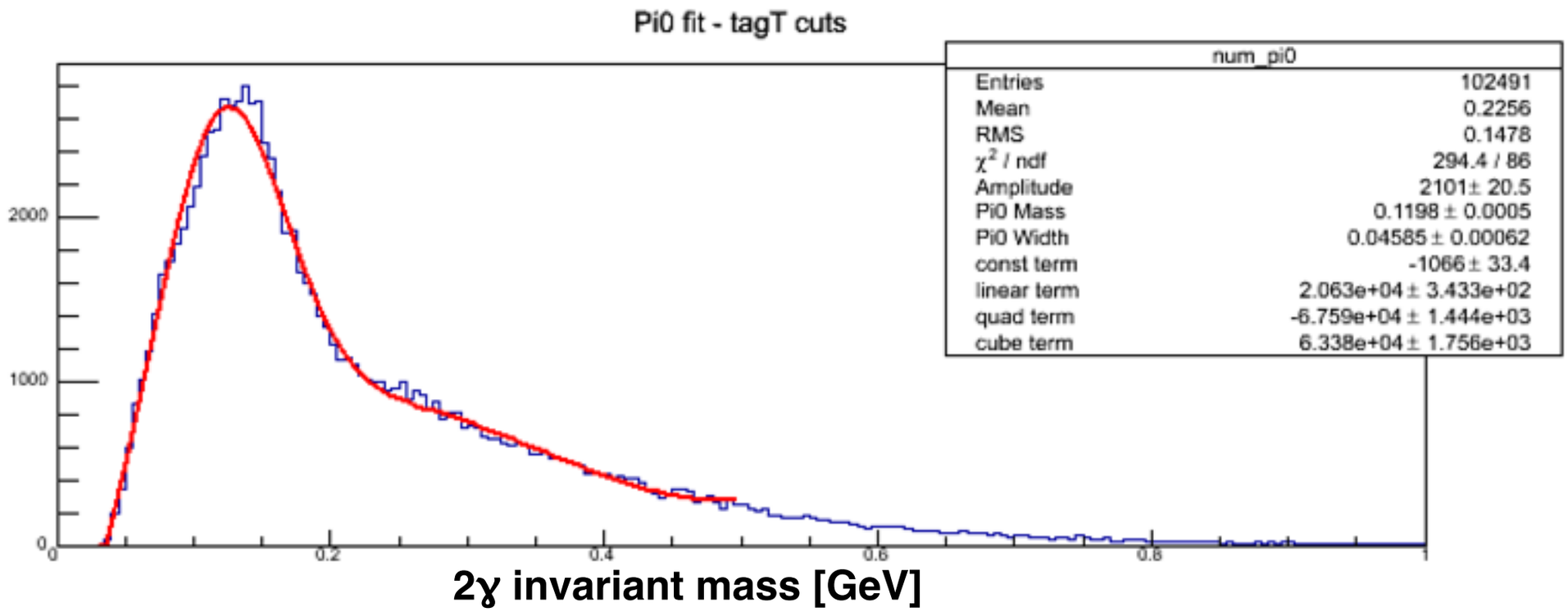
No strong dependence of Pi0 2γ invariant mass on the photon energy

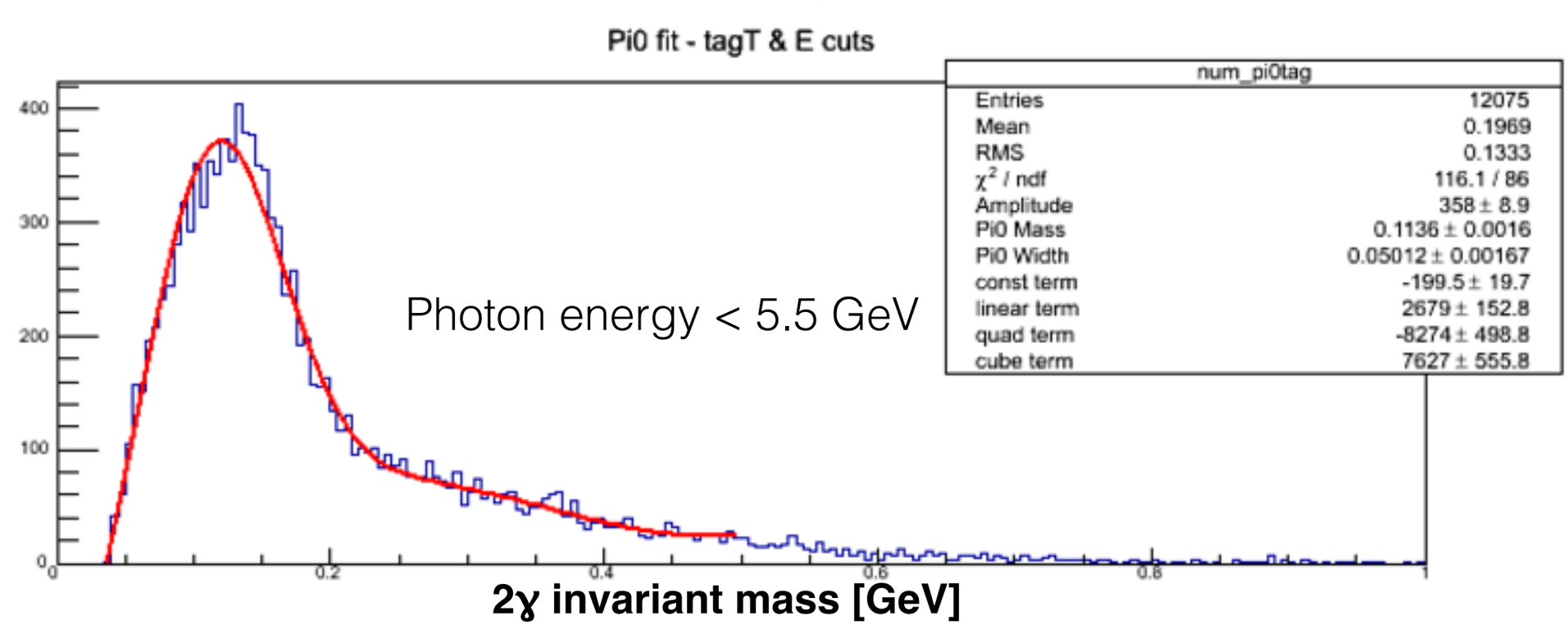
Number of Pi0s

FCAL triggered

HVs at 300 a.u. gain

Number of Pi0s below 5.5 GeV ~ 19%



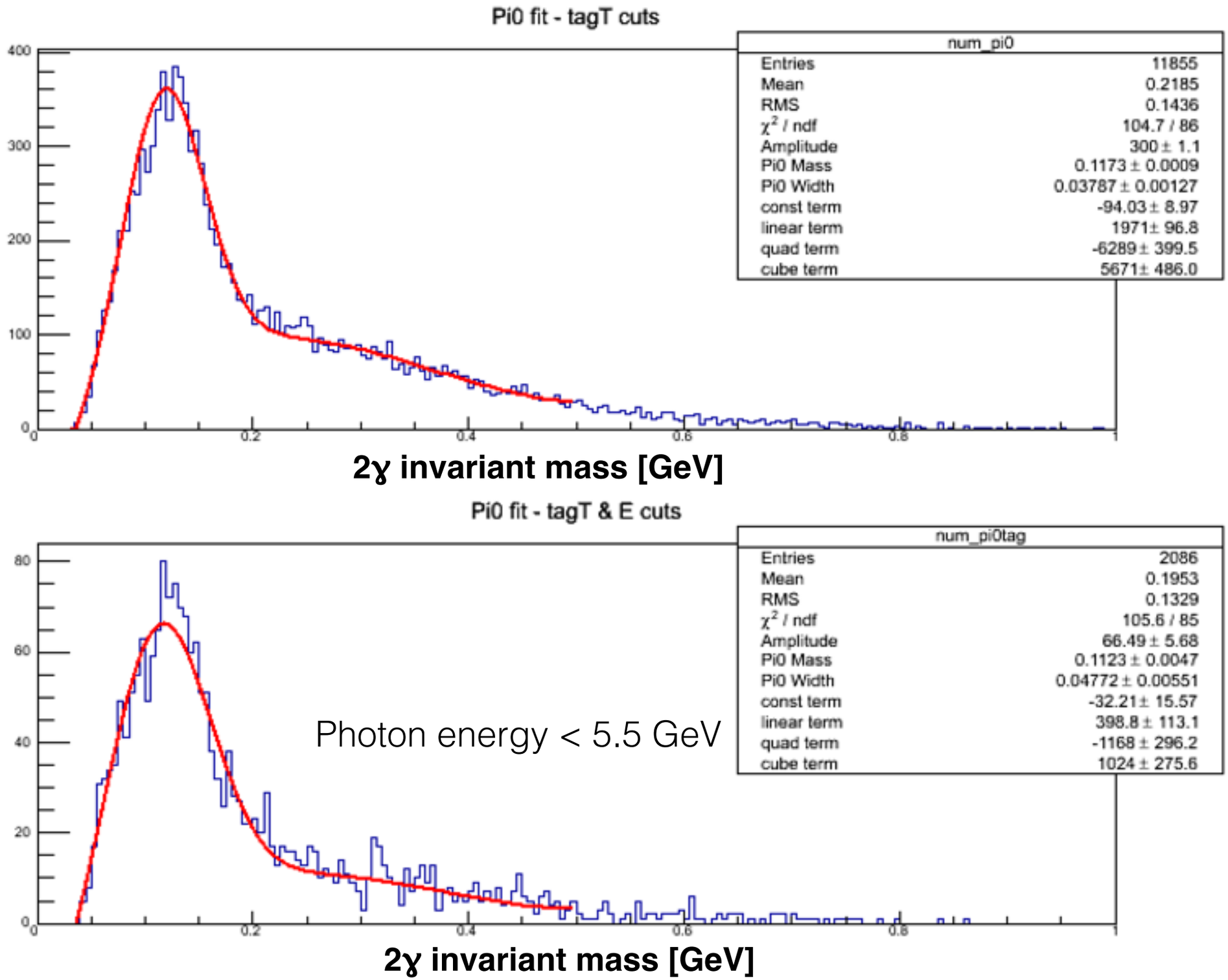


Number of Pi0s

FCAL triggered

HVs at 600 a.u. gain

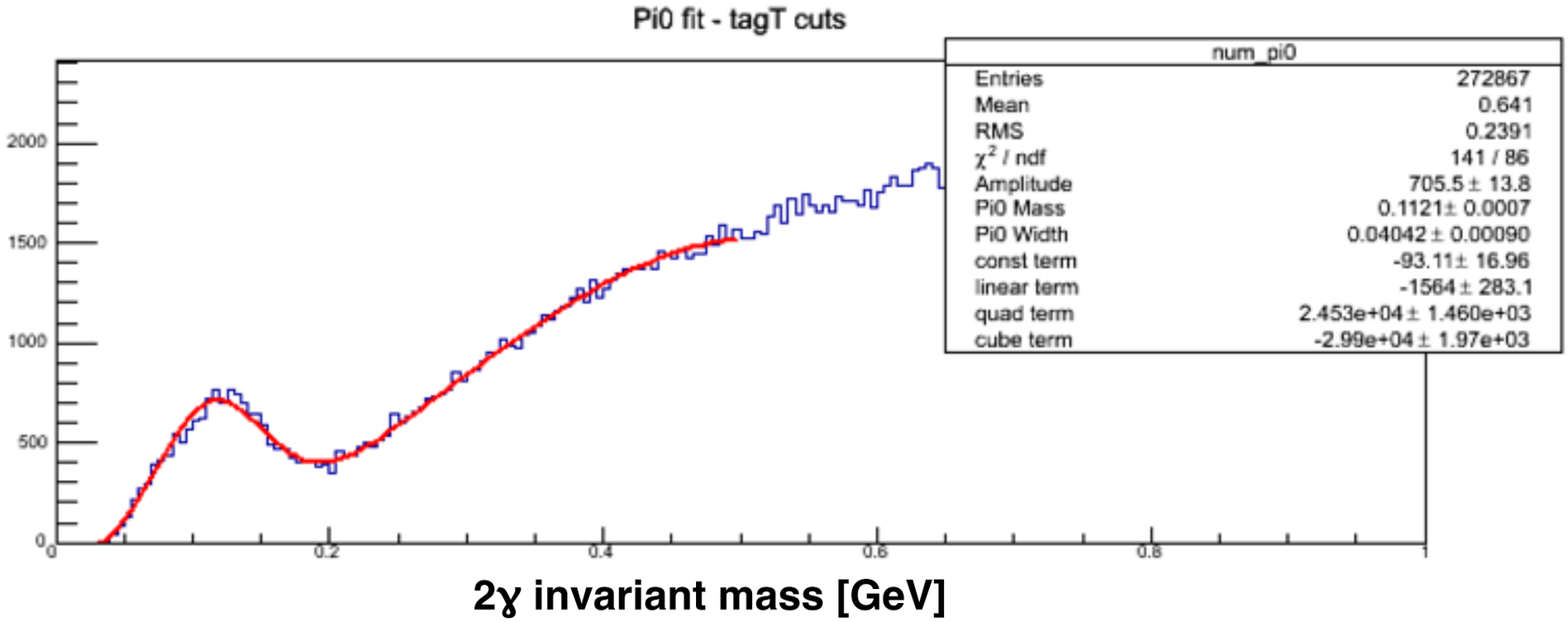
Number of Pi0s below 5.5 GeV ~ 28%



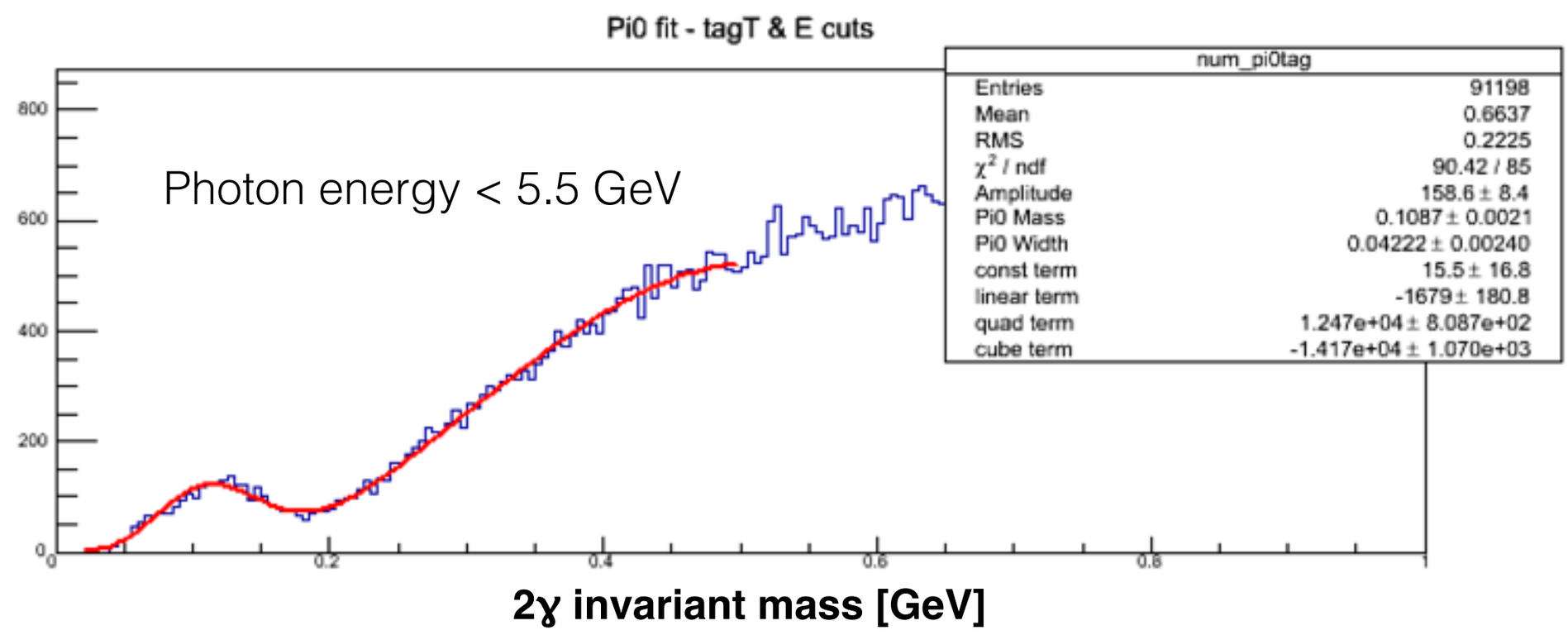
Number of Pi0s

FCAL + BCAL triggered

HVs at 600 a.u. gain



Number of Pi0s below 5.5 GeV ~ 23%



Summary

Number of pi0s in FCAL NOT ∝ 1/E (photon energy)

Under identical running conditions (including time limit) as that of last Fall, we'll get about 30% of total pi0s at photon energy < 5.5 GeV

Background changes with trigger type; need a robust trigger

To do: study variation of number of pi0s as a function of total hit energy