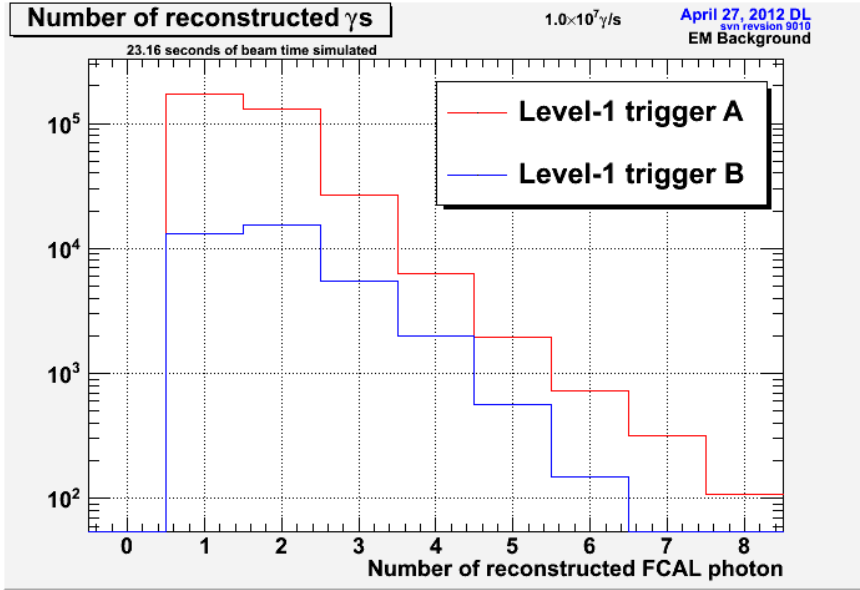


EM Background studies

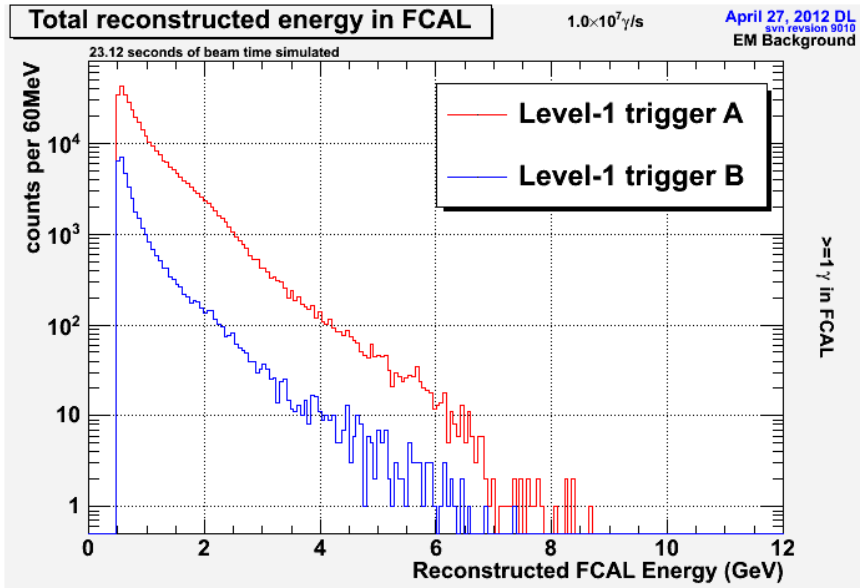
David Lawrence JLab

Apr. 27, 2012

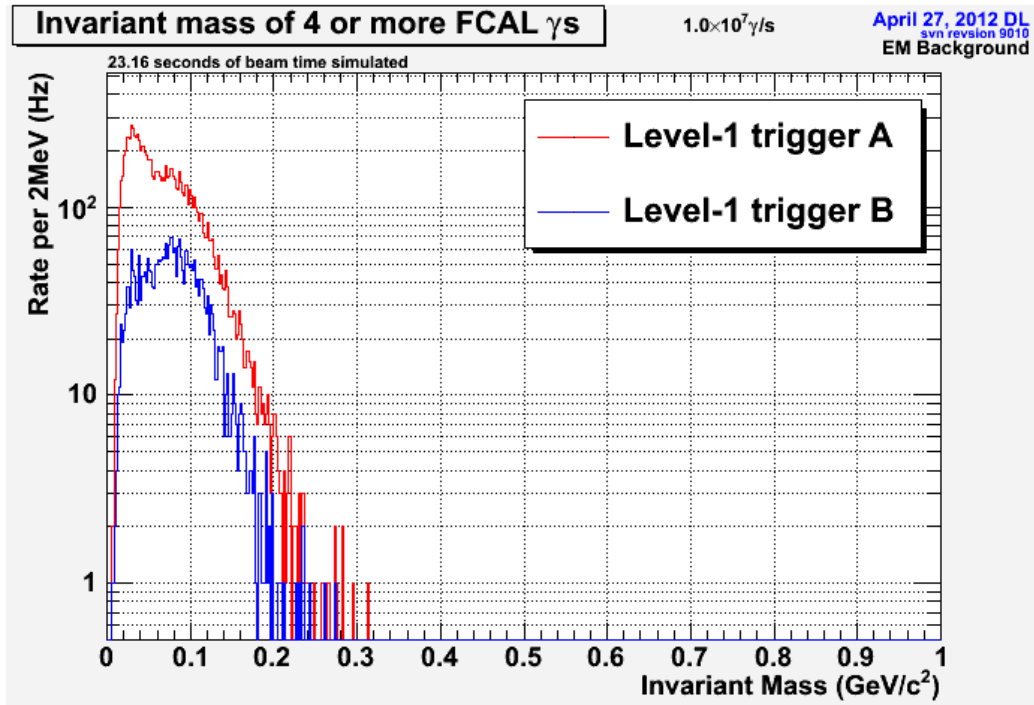
- Simulated EM background using *hdgeant*
- Standard FCAL geometry
- 400ns time window
- ~23 seconds of beam time
- Coherent Bremstrahlung E_γ spectrum
- Nominal GlueX data rate 1.0×10^7 tagged γ/s
- Apply 2 different L1 trigger algorithms
 - $(E_{\text{BCAL}} + 4 \cdot E_{\text{FCAL}}) > 2\text{GeV}$ & $(E_{\text{BCAL}} > 200\text{MeV})$ & $(E_{\text{FCAL}} > 30\text{MeV})$
 - $(E_{\text{BCAL}} + 4 \cdot E_{\text{FCAL}}) > 2\text{GeV}$ & $(E_{\text{BCAL}} > 30\text{MeV})$ & $(E_{\text{FCAL}} > 30\text{MeV})$ & $(N_{\text{start_counter}} > 0)$



Number of reconstructed FCAL photons
Passing Level-1 trigger



Energy sum of reconstructed FCAL
photons



Invariant mass of all reconstructed FCAL photons for events with 4 or more photons in FCAL

Curves normalized to real time to indicate Level-1 trigger rate as a function of the invariant mass.

Currently running 4x10⁷ tagged γ /s data set.