



$$\omega \rightarrow \pi^+ \pi^+ \pi^0, \pi^0 \rightarrow \gamma(\gamma)$$

- Noteworthy cuts:
  - Kinfite CL (vertex & MM=0) > 0.001
  - Reconstructed photon > 500 MeV
  - Recoil against p selection below
- Other cuts in backup



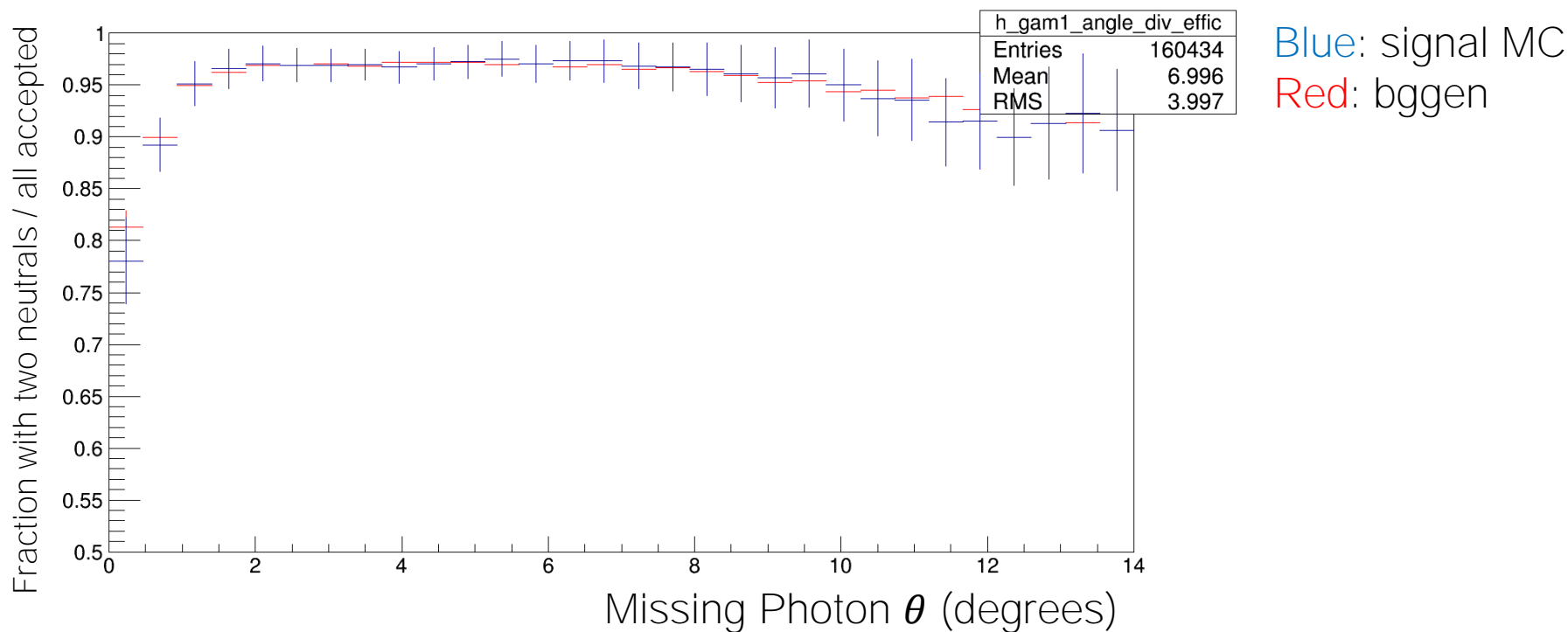
# Fraction With Additional Neutral Shower

- Look at fraction of events that have two or more neutral showers
- Study in bins of  $\theta$  for missing photon
- Fast and loose metric-
  - No requirement that  $\gamma\gamma$  inv. add up to  $\pi^0$  mass
  - Definitely not the final word on efficiencies...



# No Trigger Simulation: Signal MC vs BGGEN

- Signal MC sample: generated in 2016, genr8, beam E=9 GeV
- BGGEN sample: sim1\_2\_1 to compare to 2016 data



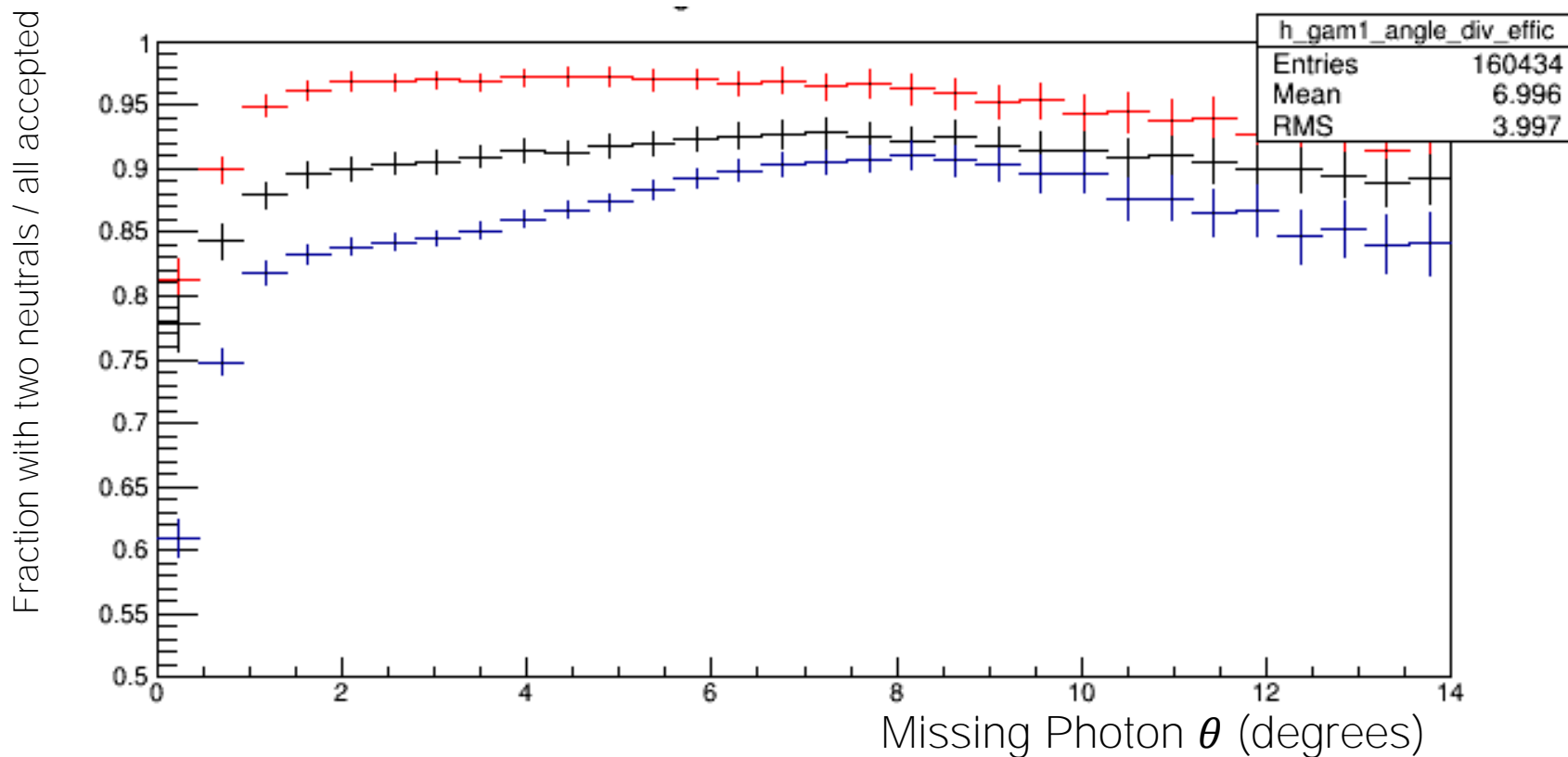


# Adding Trigger Simulation

Blue: signal MC w/ trigger simulation (provided by Sean)

Black: 2016 data “golden runs”

Red: bggen (sim1\_2\_1)



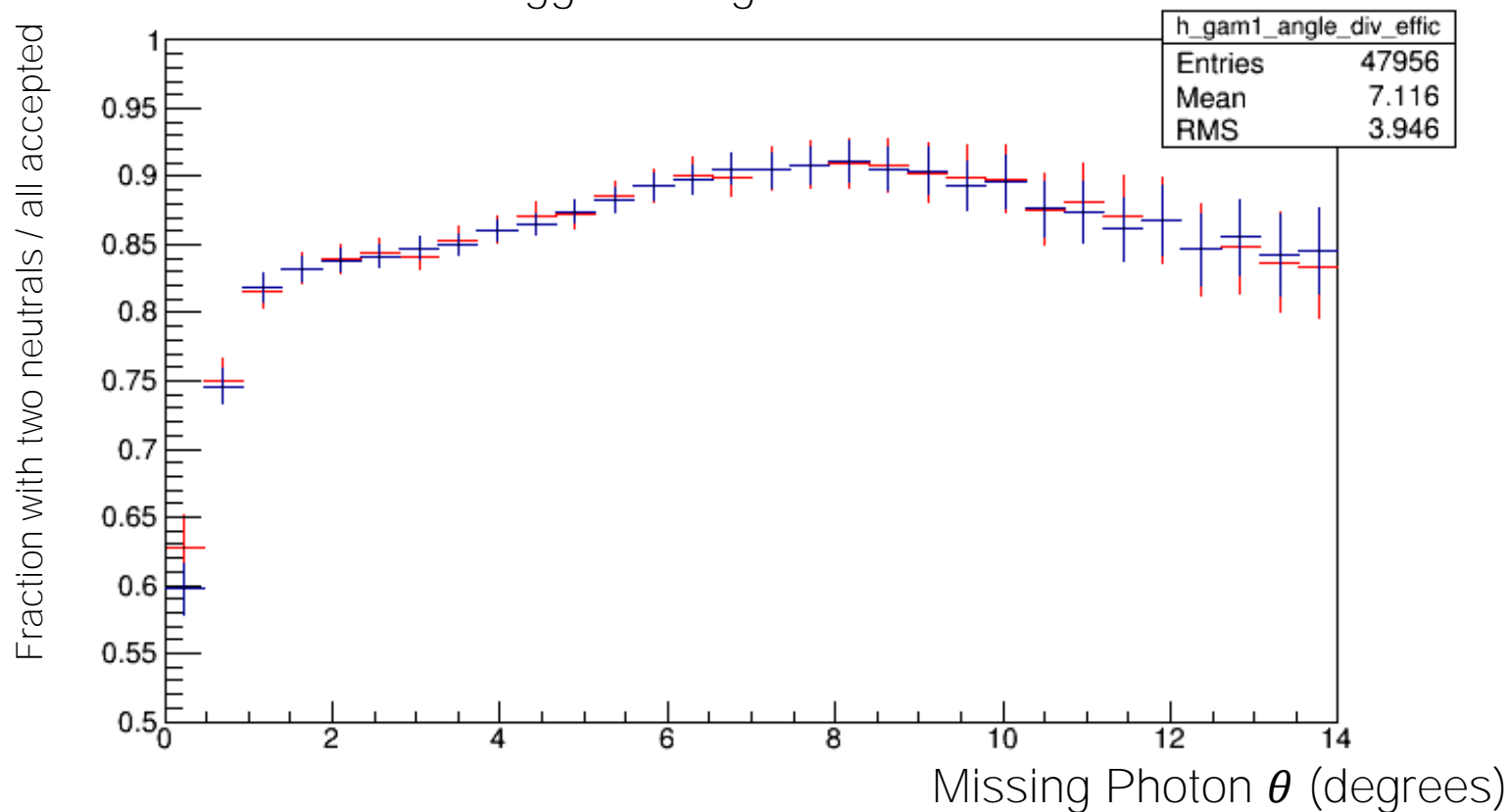


# Signal MC with/without Random Trigger

Both: signal MC w/ trigger simulation (provided by Sean)

Blue: no random trigger

Red: random trigger background added





# Backup: Event Selection (Detailed)

- No extra tracks
- Reconstructed photon  $> 500$  MeV
- $8 < \text{beam } E < 9$  GeV
- All tracks:
  - $48 \text{ cm} < Z\text{-vertex} < 78 \text{ cm}$
  - $\text{DOCA} < 1 \text{ cm}$
- PID timing:
  - $\Delta t < 1 \text{ ns}$  TOF
  - $\Delta t < 3 \text{ ns}$  BCAL
  - $\Delta t < 2.5 \text{ ns}$  FCAL
- Kinematic Fitting:
  - Vertex fit
  - Constraint requiring missing (photon) mass = 0
  - 0.001 fiducial CL cut
- 12 max unused showers in event (for coding simplicity, cuts maybe 1 in 100,000 events)