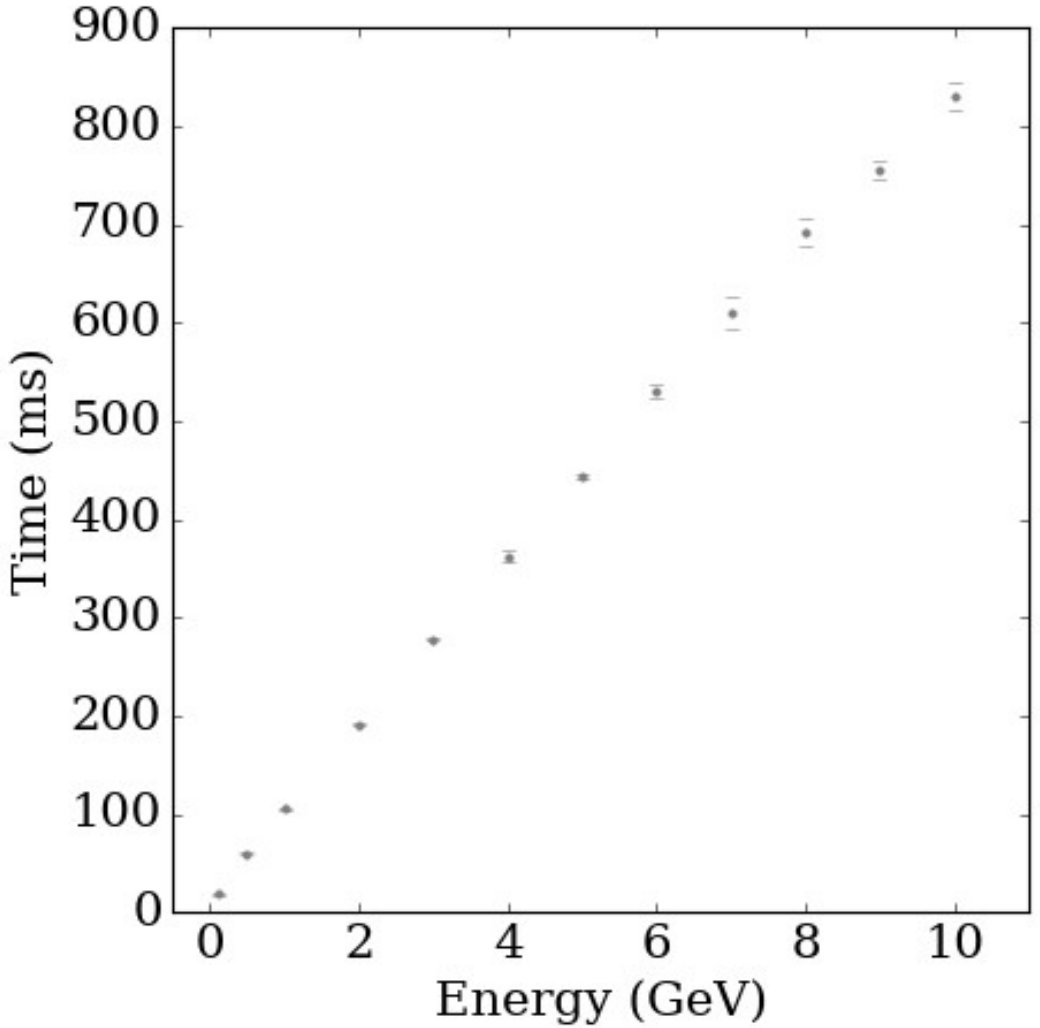
Update on BIB-AE integration in DDML and Low Energy Photons

25.05.2023

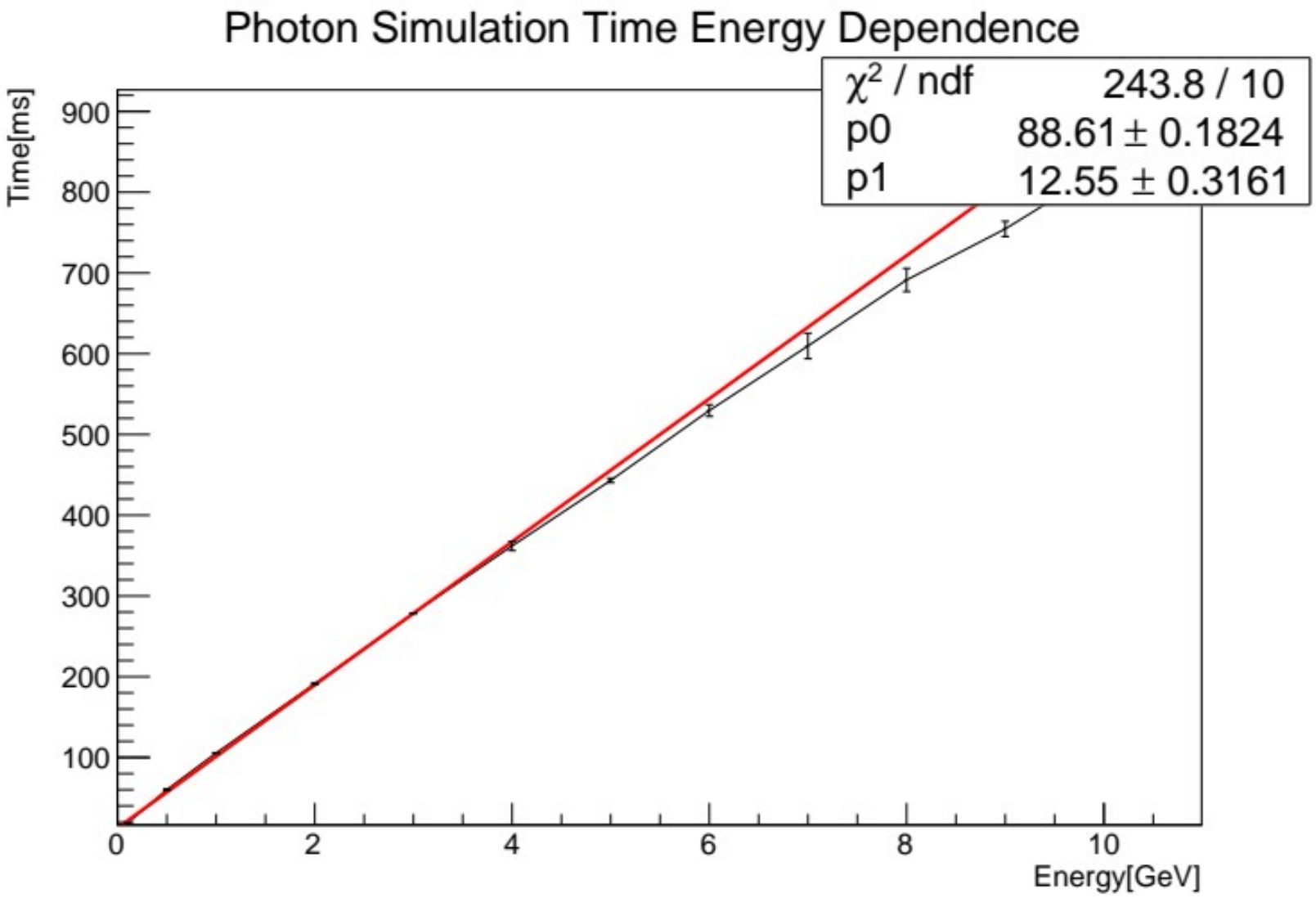
Progress on BIB-AE integration in DDML

- Successfully scripted entire BIB-AE chain (Latent flow, Main BIB-AE, Post Processing, Rescaling) into a single .pt file
- Integrated into DDML prototype library using LibTorch, minor adaptions for grid size, incident point and actual inference
- Still to do:
  - Add angular conditioning inputs in as well- at the moment angle faked, same as Frank did with the GAN
- Preliminary timing suggests that simulation time at 20 GeV is comparable to GEANT4 :(

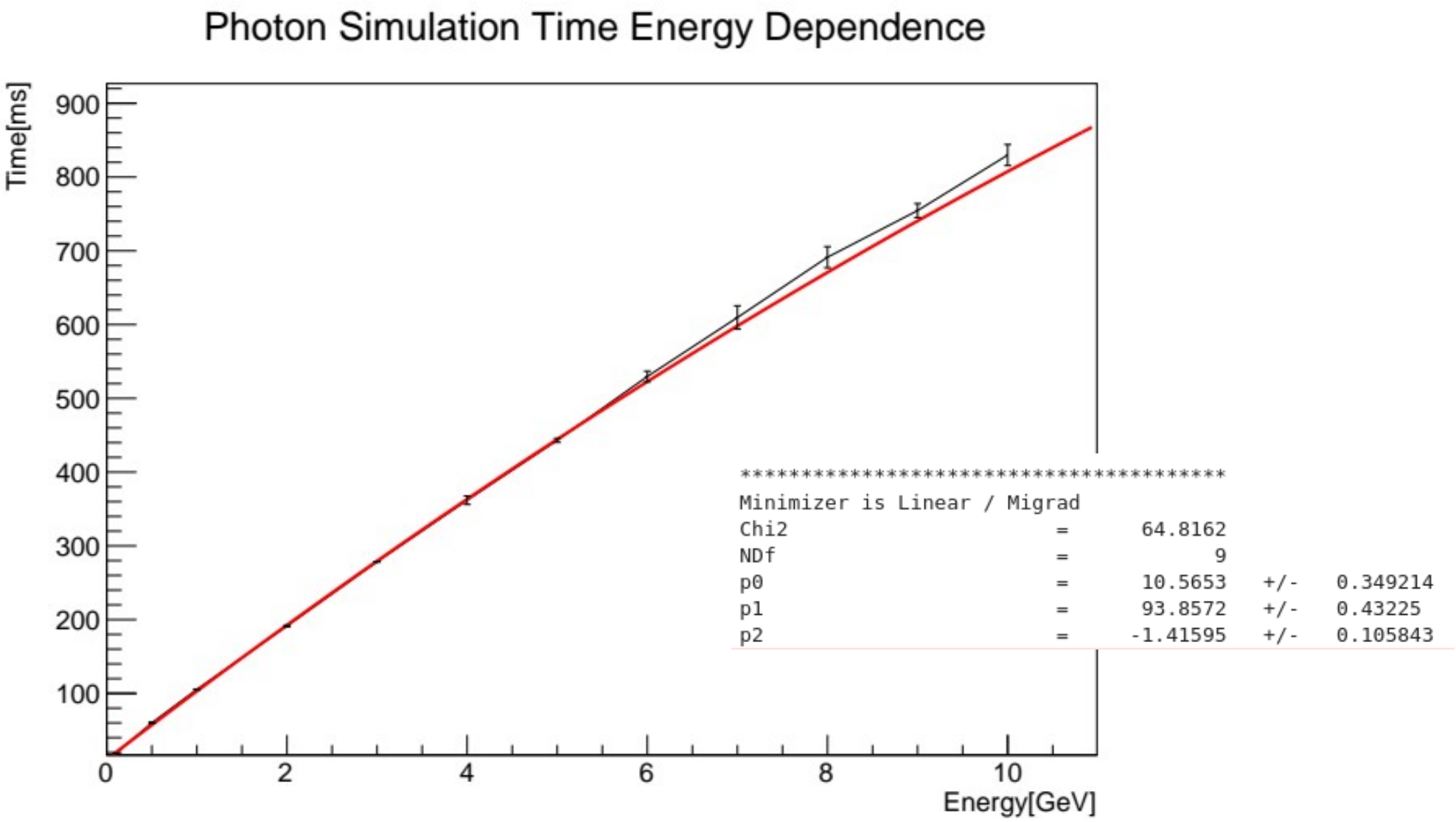
Timing for Low Energy Photons



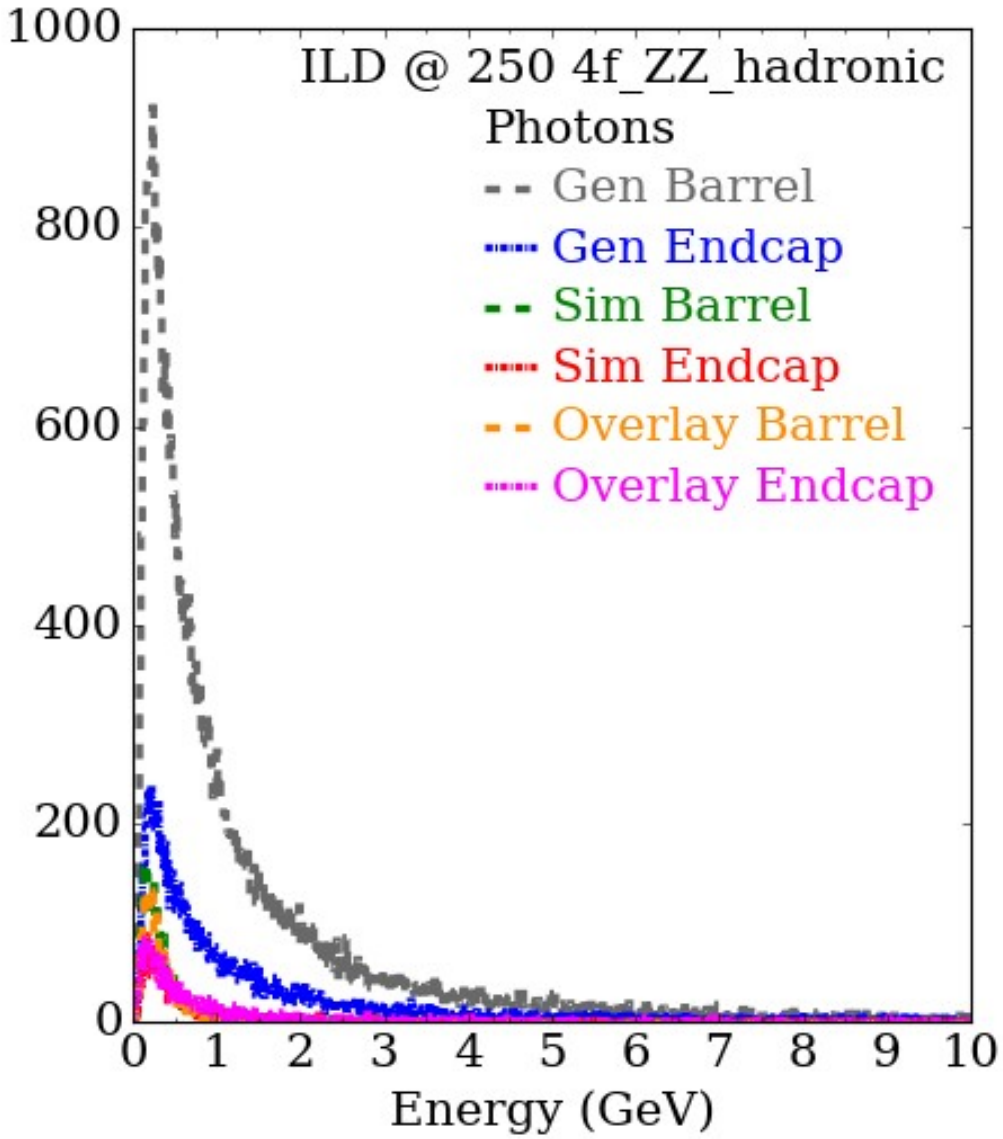
Timing for Low Energy Photons: Linear fit



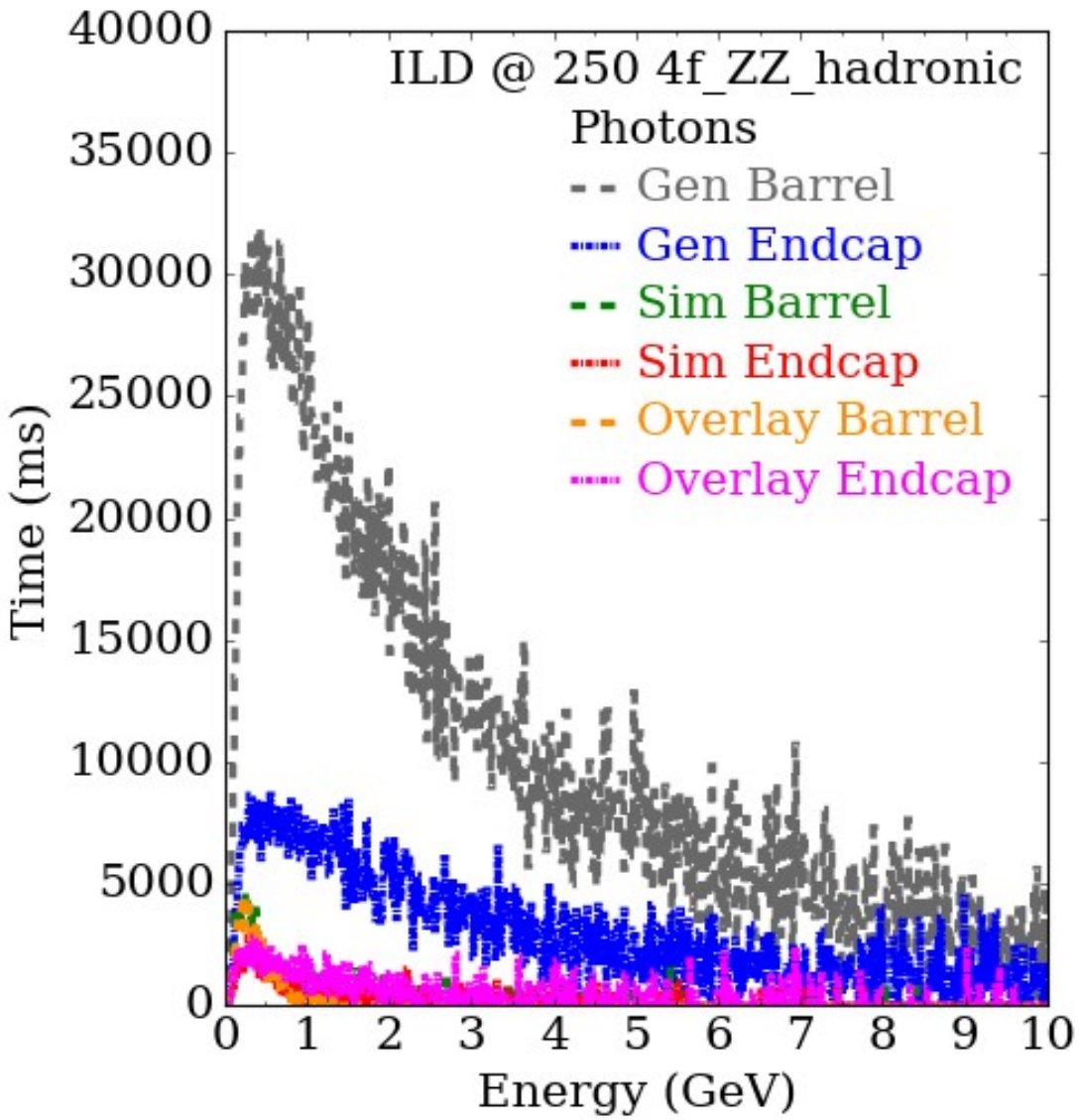
Timing for Low Energy Photons: 2nd order polynomial fit



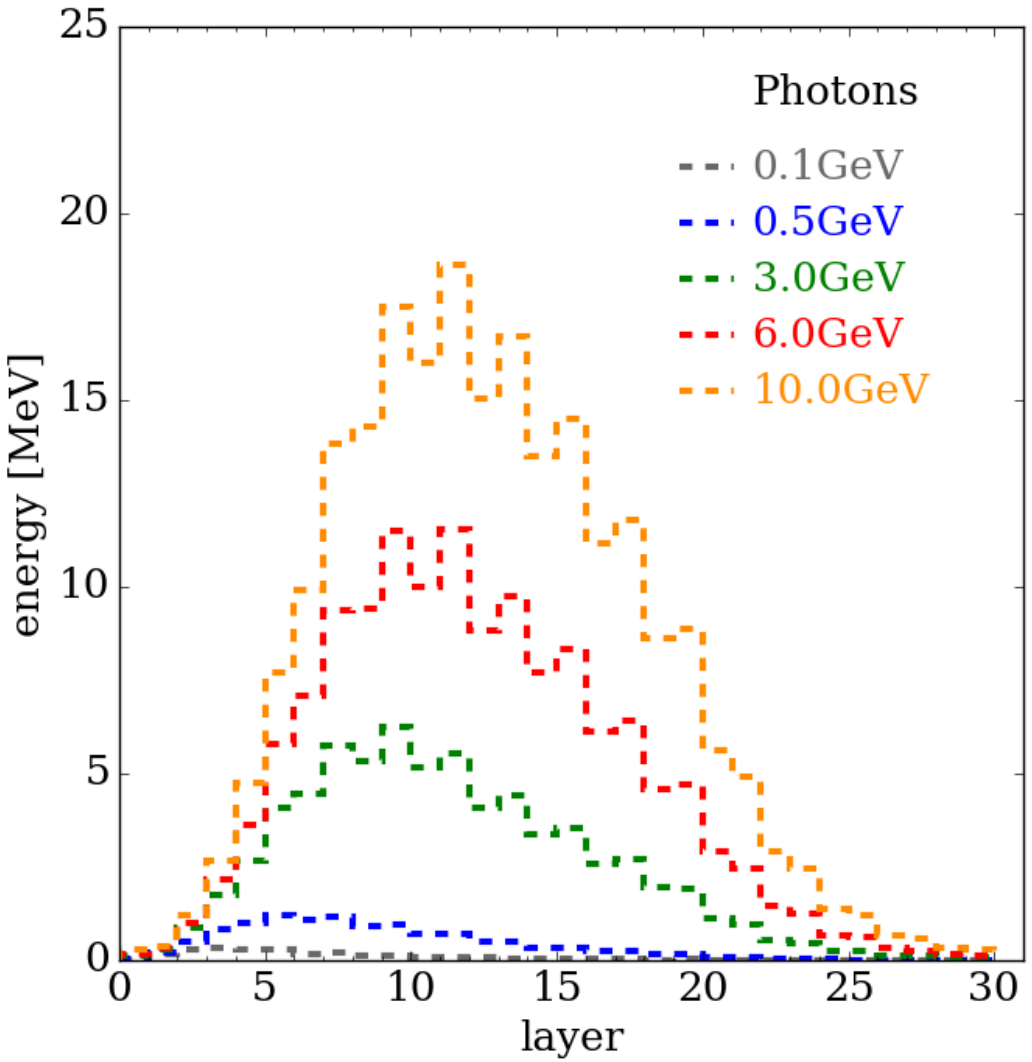
Low Energy Photons

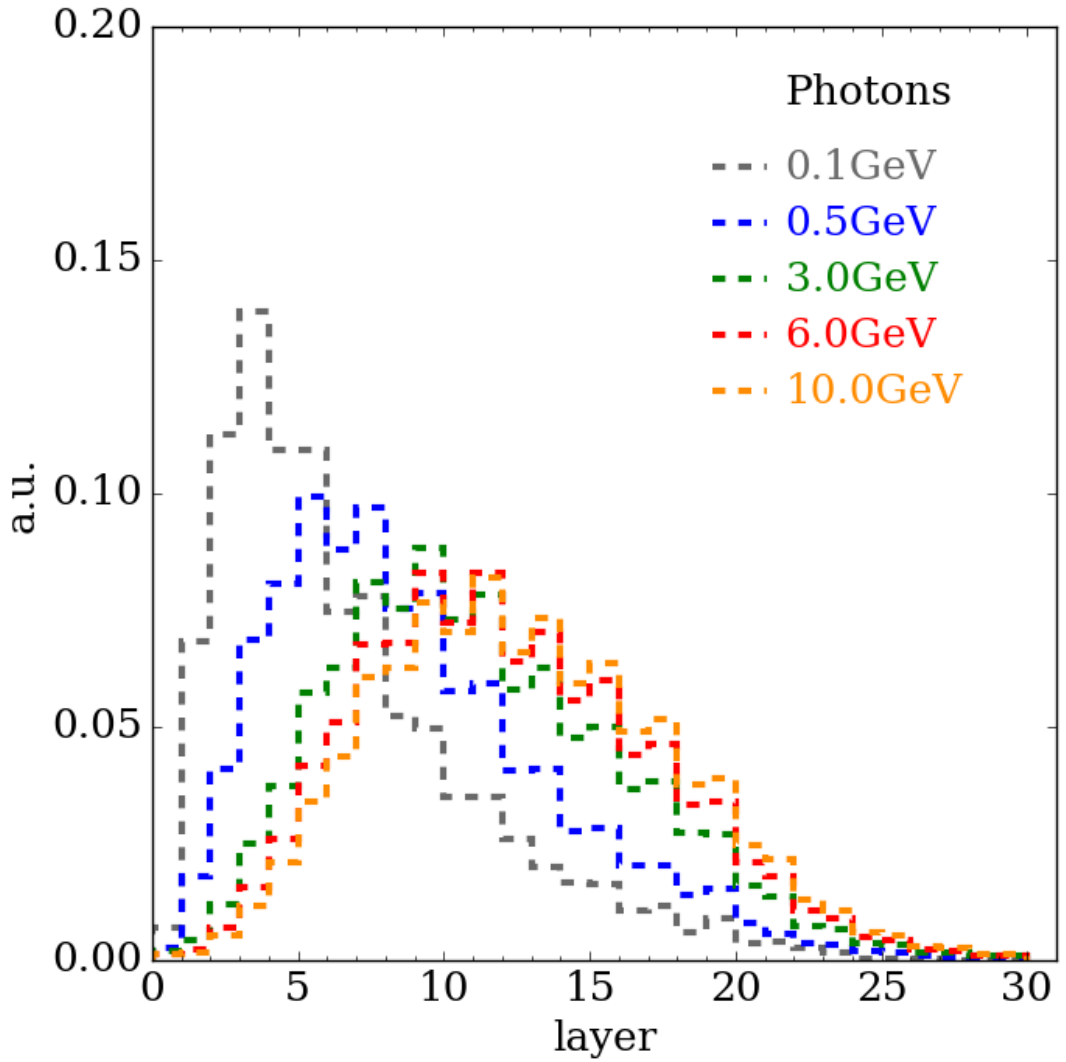


Time-weighted Low Energy Photons

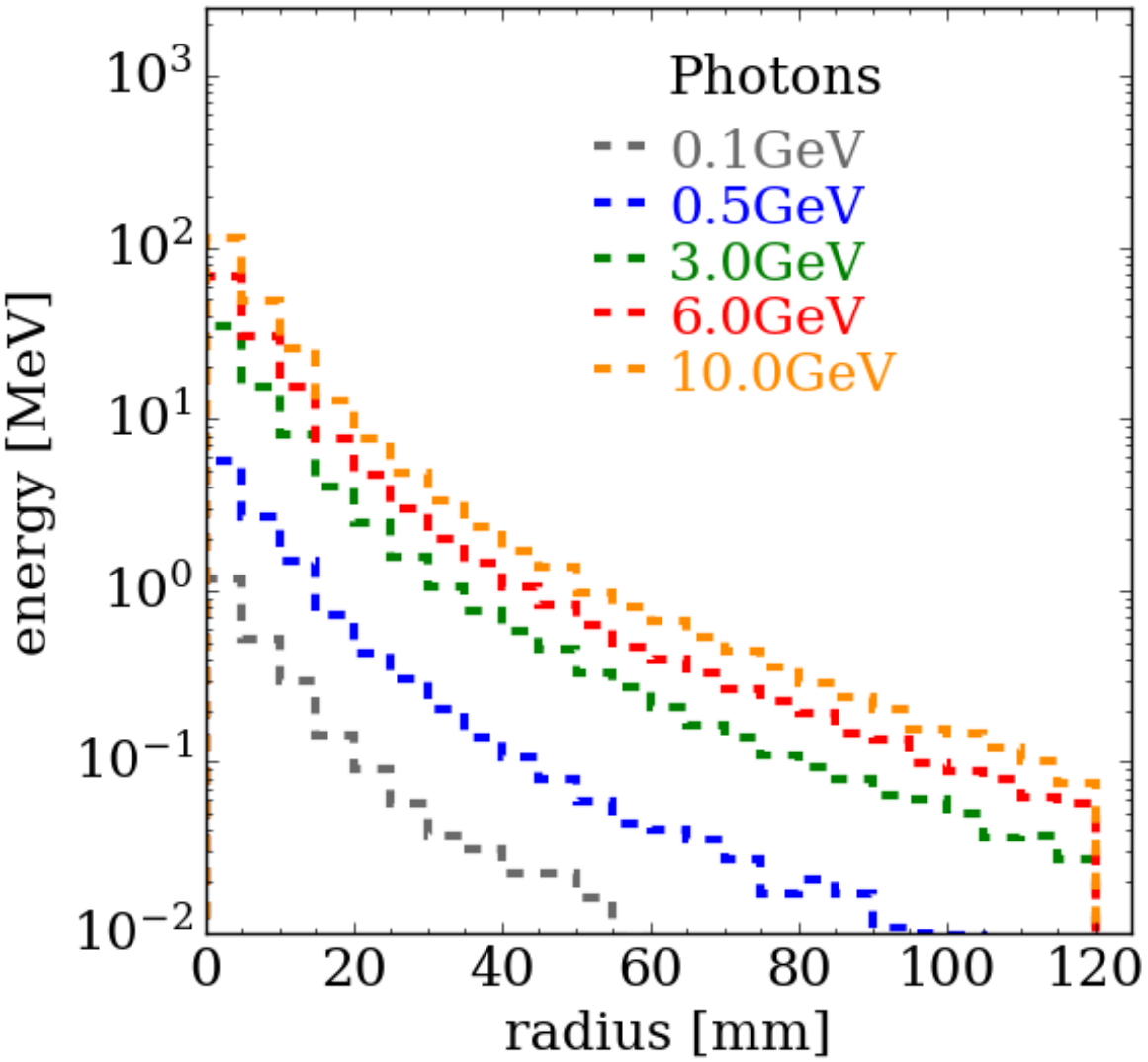


Low Energy Photons: Longitudinal Profile





Low Energy Photons: Radial Profile



Next Steps

- Start to investigate new dataset with double angle conditioning
  - Plan to shift box with incident angle to minimize overall grid size- retain information about incident cell
- Need faster networks to tackle lower energy photons, abundant from pi0s – pruning?