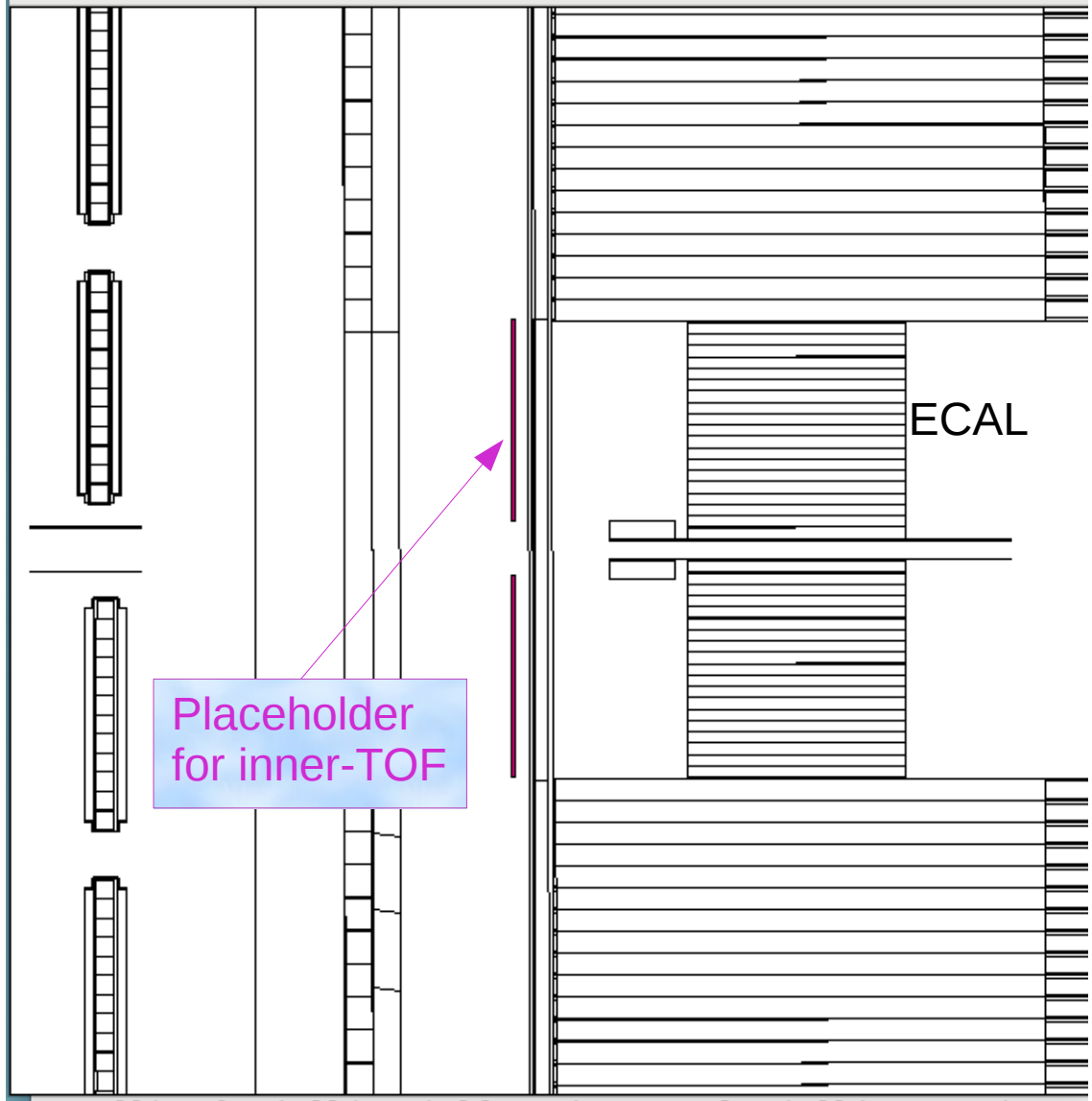
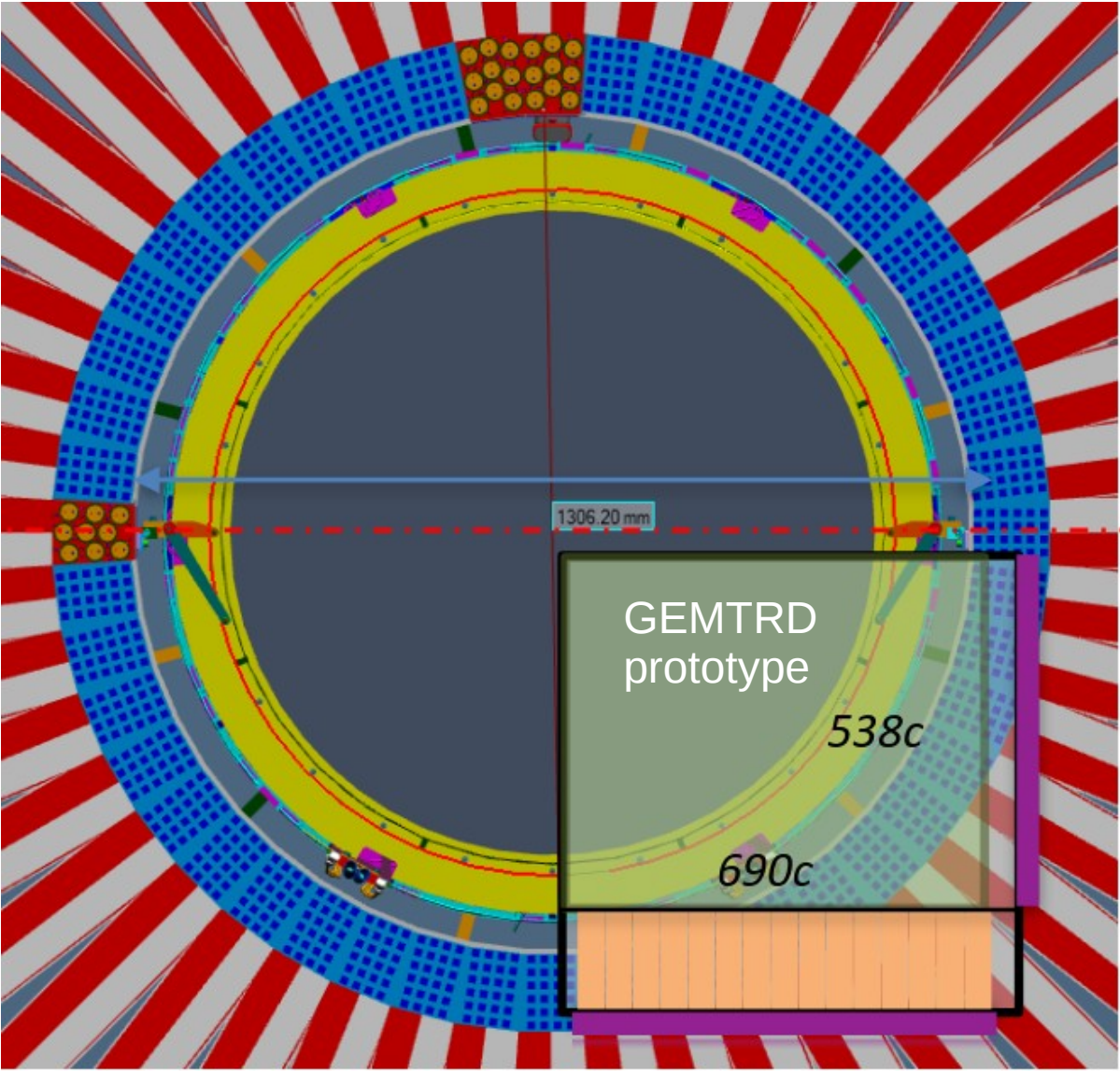


# Simulation studies for potential GlueX upgrade

Simon Taylor / JLab

- Future plans for GlueX upgrade:
  - GEMTRD at exit of solenoid
  - Running at 2-4x nominal GlueX rate (350 nA beam)
    - Rate too high for TOF: thinking about additional inner-TOF veto counter
- Plan to look at potential impacts for  $\eta \rightarrow \pi^0 \gamma \gamma$

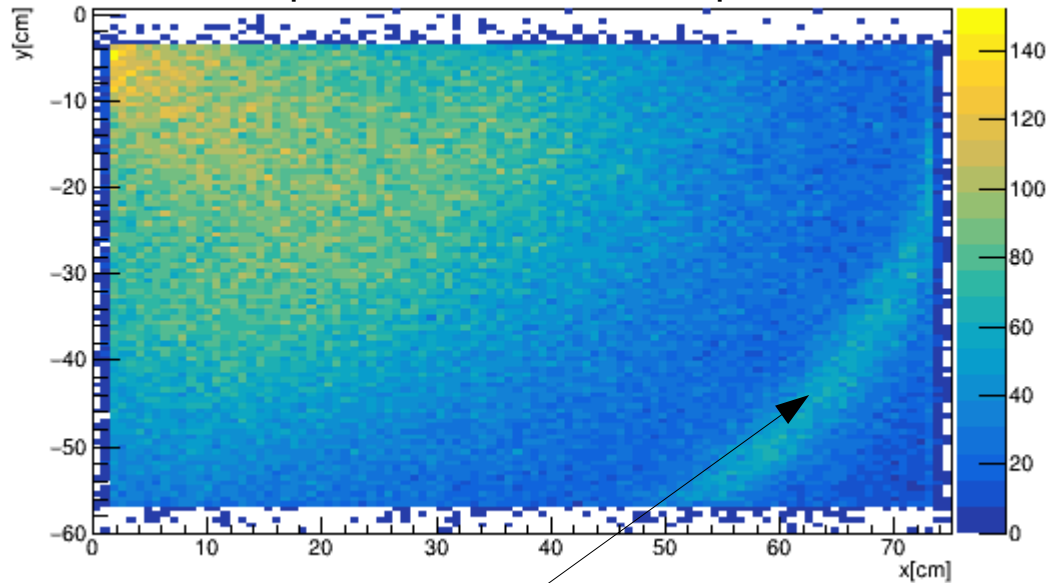
# GEMTRD and i-TOF



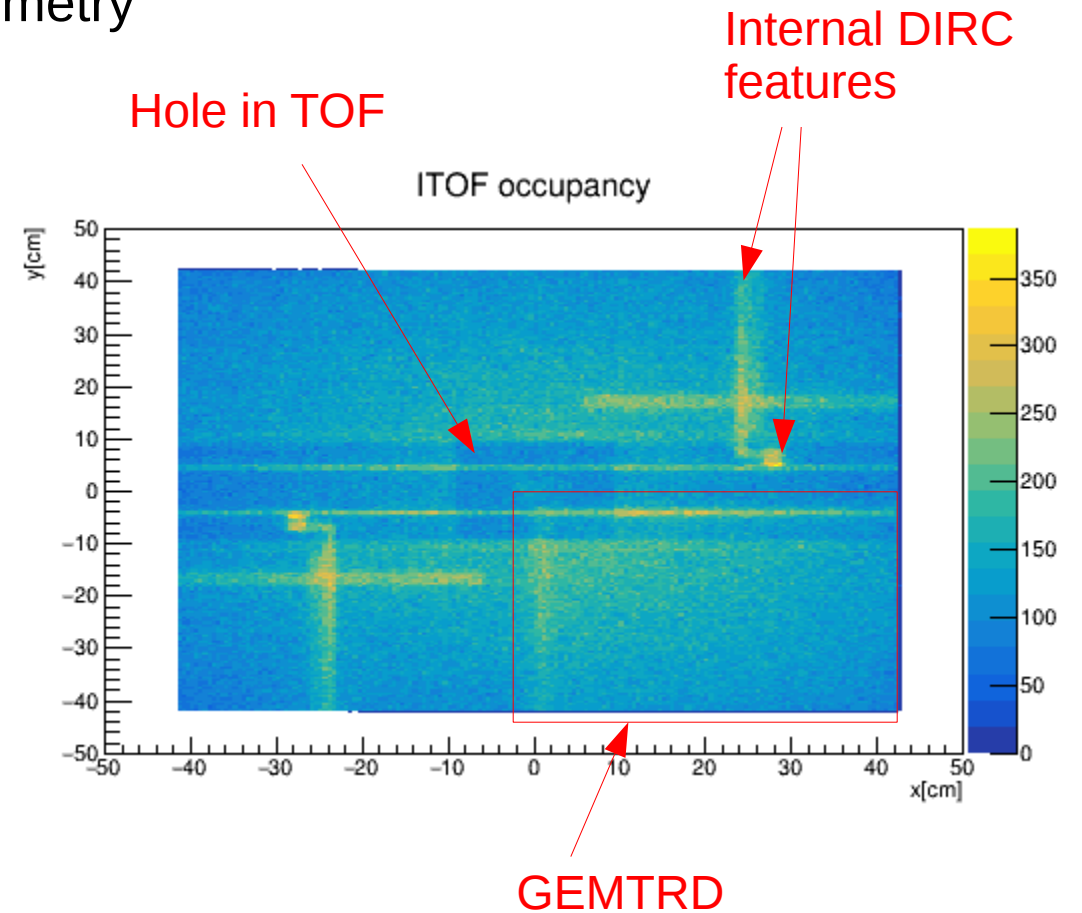
# First look at simulated interactions with new detector volumes

- Implemented models for GEMTRd and inner-TOF in HDGeant4
  - For now inner-TOF is a single 4-mm thick volume of scintillator
  - FCAL-2 + DIRC + standard regular TOF geometry
- Looked at  $\eta \rightarrow 2\gamma$  events

Reconstructed position at GEMTRD upstream foil face



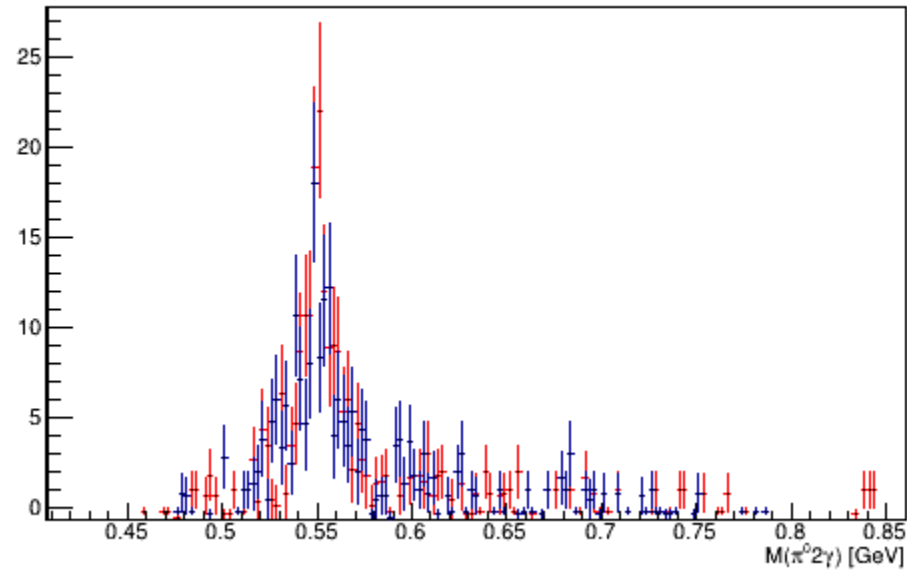
Shadow of BCAL downstream end



# Background in $\eta \rightarrow \pi^0 \gamma \gamma$ channel

- Generated 5.6M  $\eta \rightarrow 2\gamma$  events **with** and **without** GEMTRD

BCAL+FCAL



FCAL only

