

# ND-LAr geometry update & validation

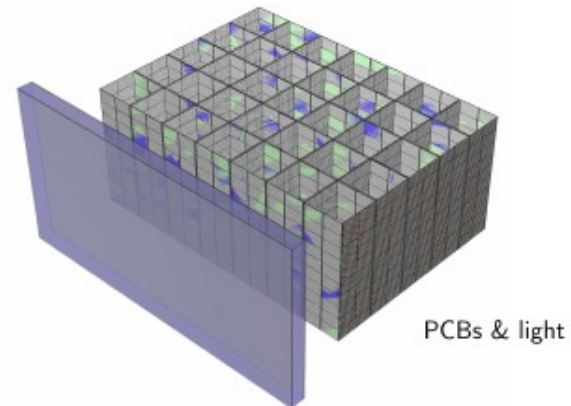
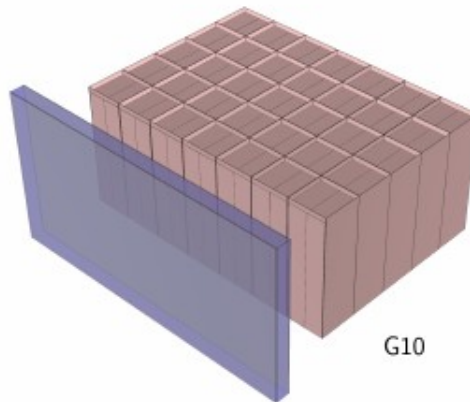
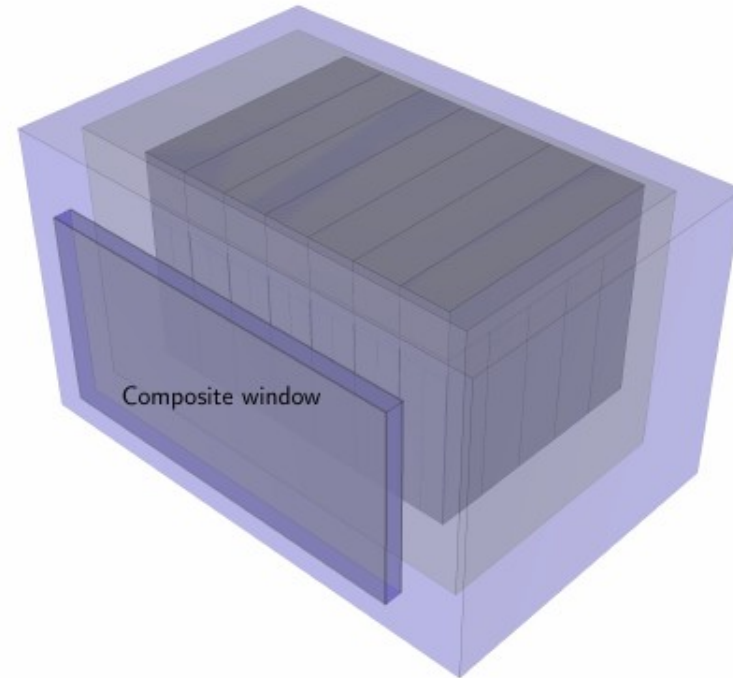
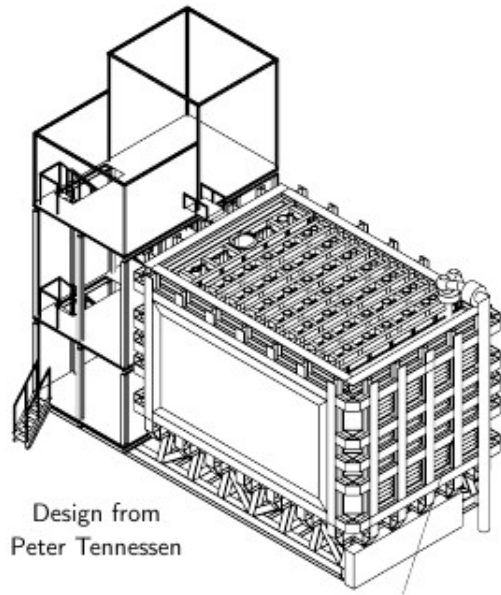
Chris Marshall  
University of Rochester  
8 April, 2021



# Geometry updates

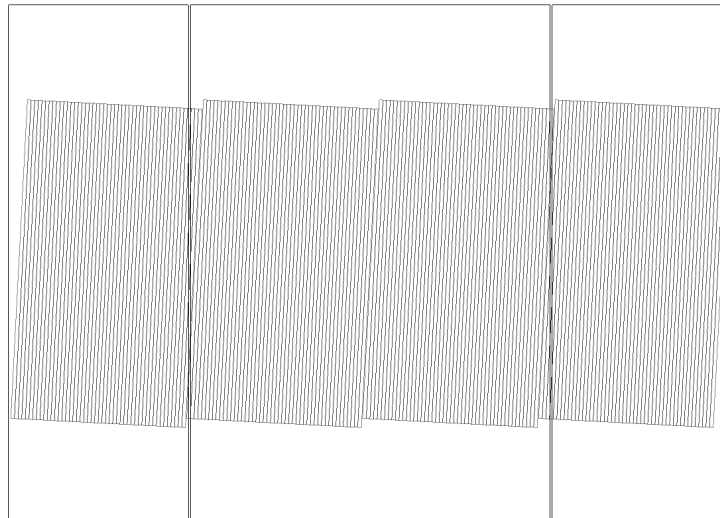
- Work done by Andy & Zach
- Mainly updates to the cryostat geometry, to be consistent with engineering drawings
  - Upstream steel structure has correct mass
  - Downstream composite wall implemented
  - Position of active volume within cryostat is now correct

# Geometry updates

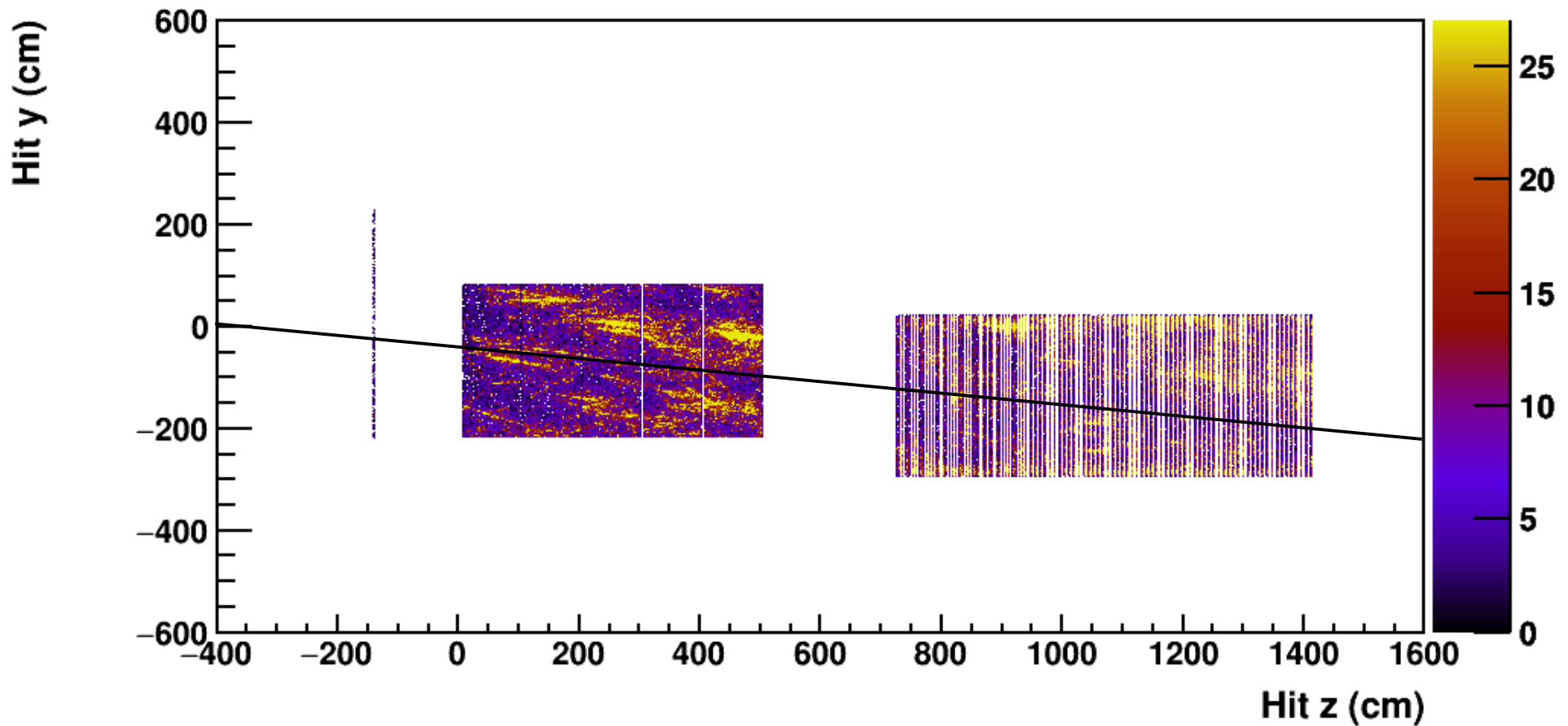


# TMS geometry update

- Work done by Palash
- Fixes to steel dimensions, scintillator tilt, scintillator location within plane
- Fixes to materials – air is in the correct places now
- Fixes to the front plane, boundary between 1.5cm and 4cm steel region

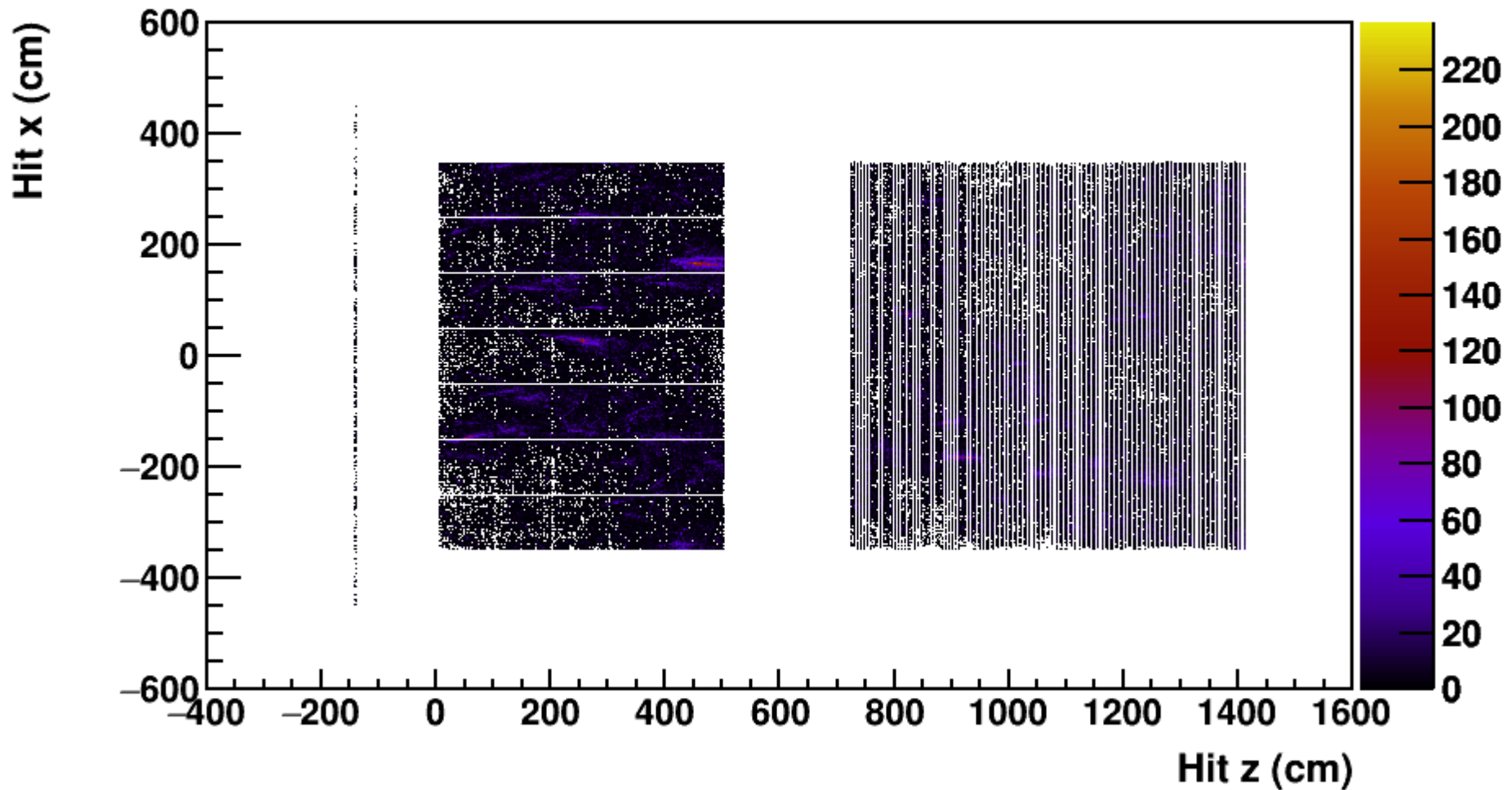


# Hits in active volumes (YZ)



- $z = 0$  is upstream face of LAr active volume
- Beam axis goes through  $\sim$ center of 1.5cm region of TMS

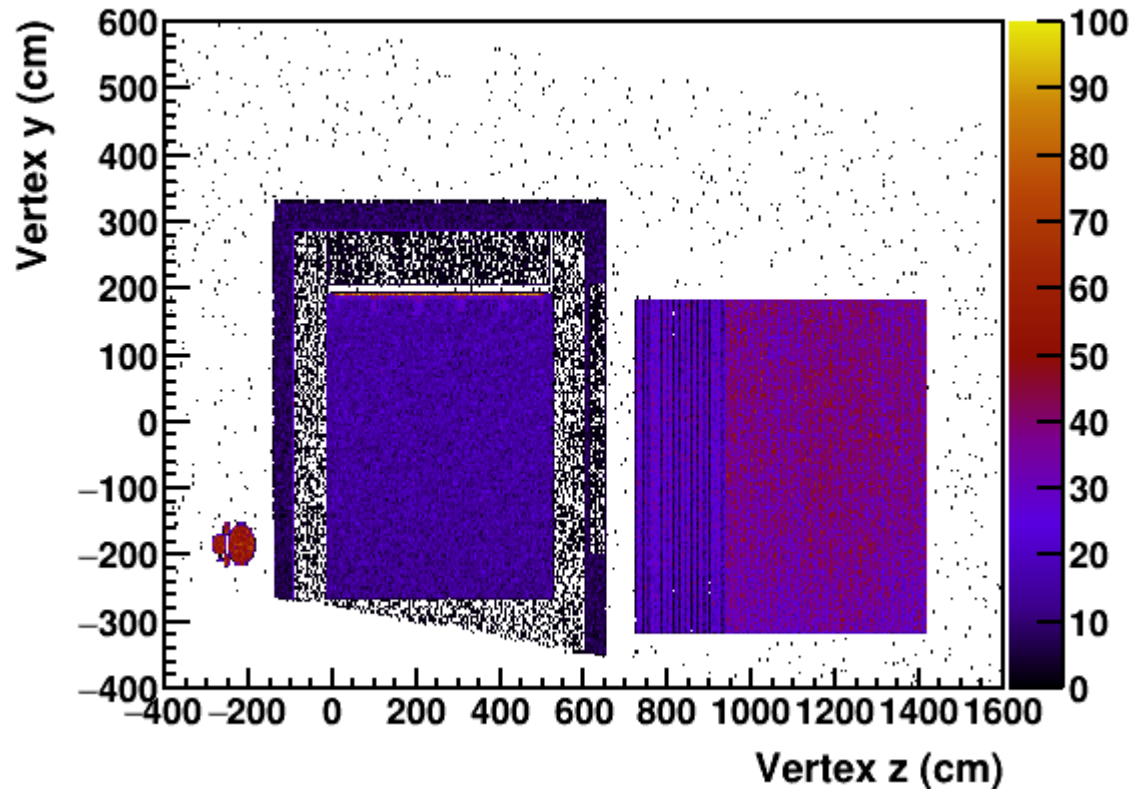
# Hits in active volumes (XZ)



- Beam axis is just  $x = 0$

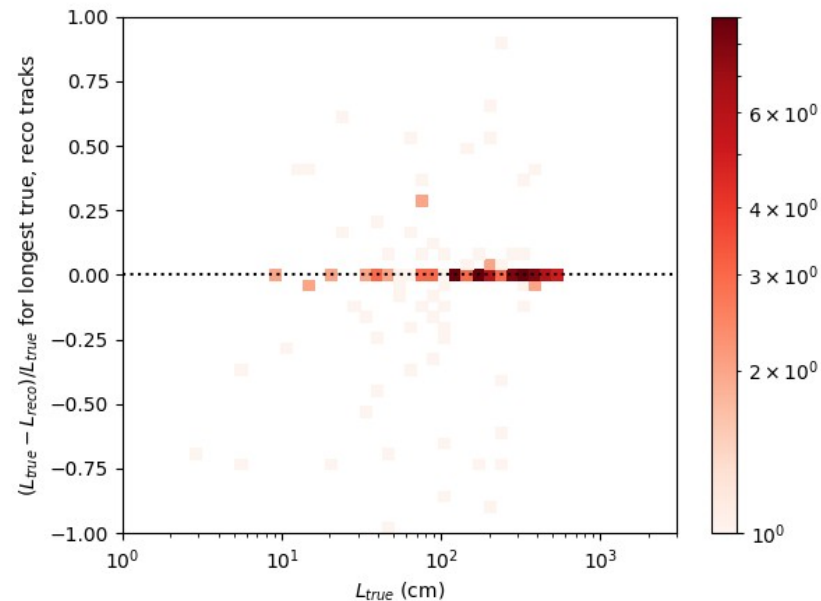
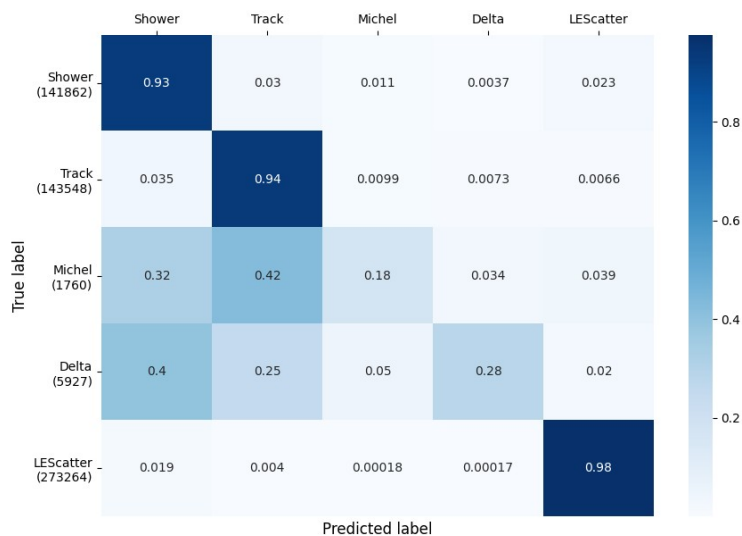


# Interaction vertex position



- Passive argon, plumbing, insulation, steel structure, composite window are all clearly visible
- Steel structure of TMS is consistent with drawings

# Quick look at reconstruction



- Jeremy ran reconstruction over small sample of new files
- Initial results look similar to previous performance



# edep-sim files

- Ran  $1e19$  POT FHC validation ( $\sim 2.5$  days) on the whole LAr+TMS geometry ( $\sim 23$ M events)
- edep-sim output files are here:
  - `/pnfs/dune/scratch/users/marshalc/geomValHallLArTMS2/edep/0m/00/`