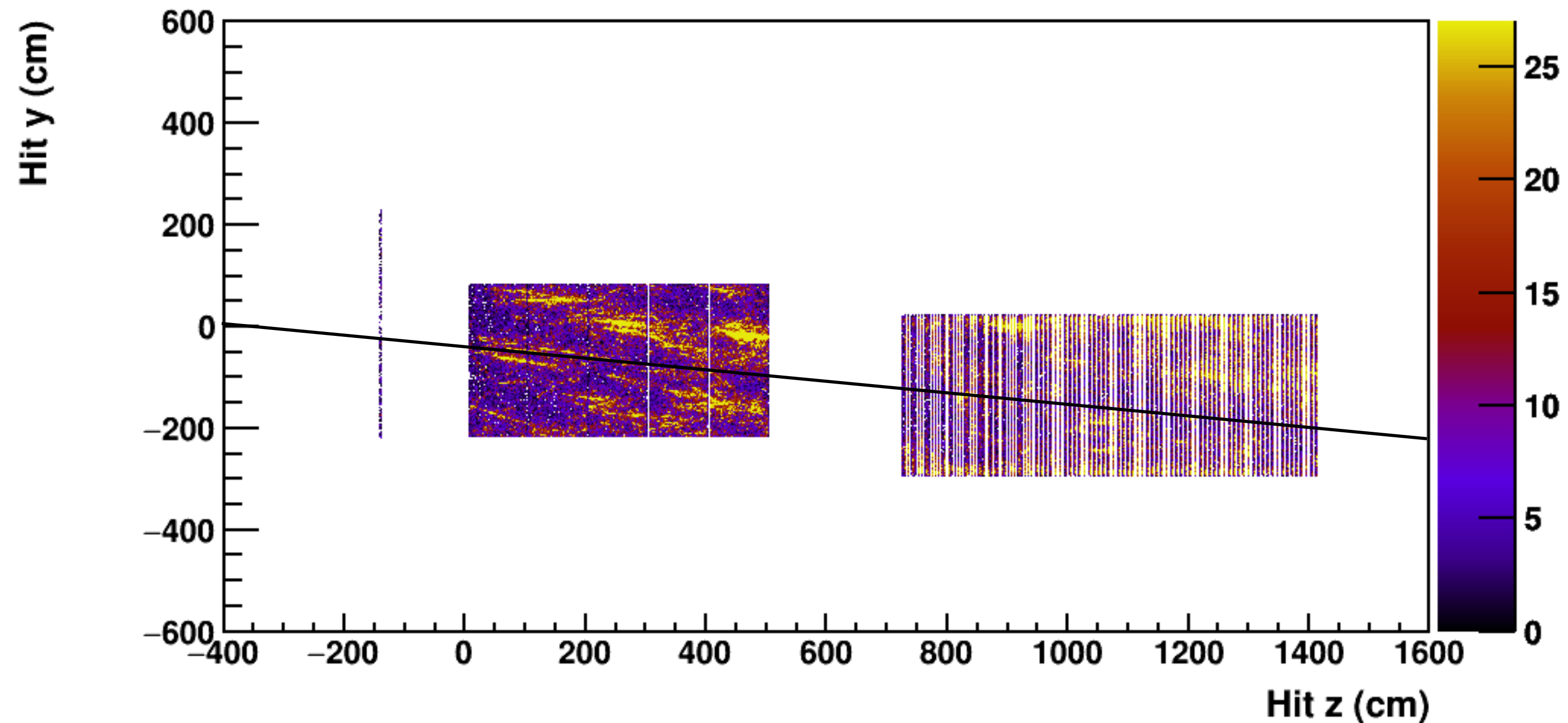# DUNE ND Reco/Sim updates

Linda Cremonesi and Mathew Muether

2021 May 12

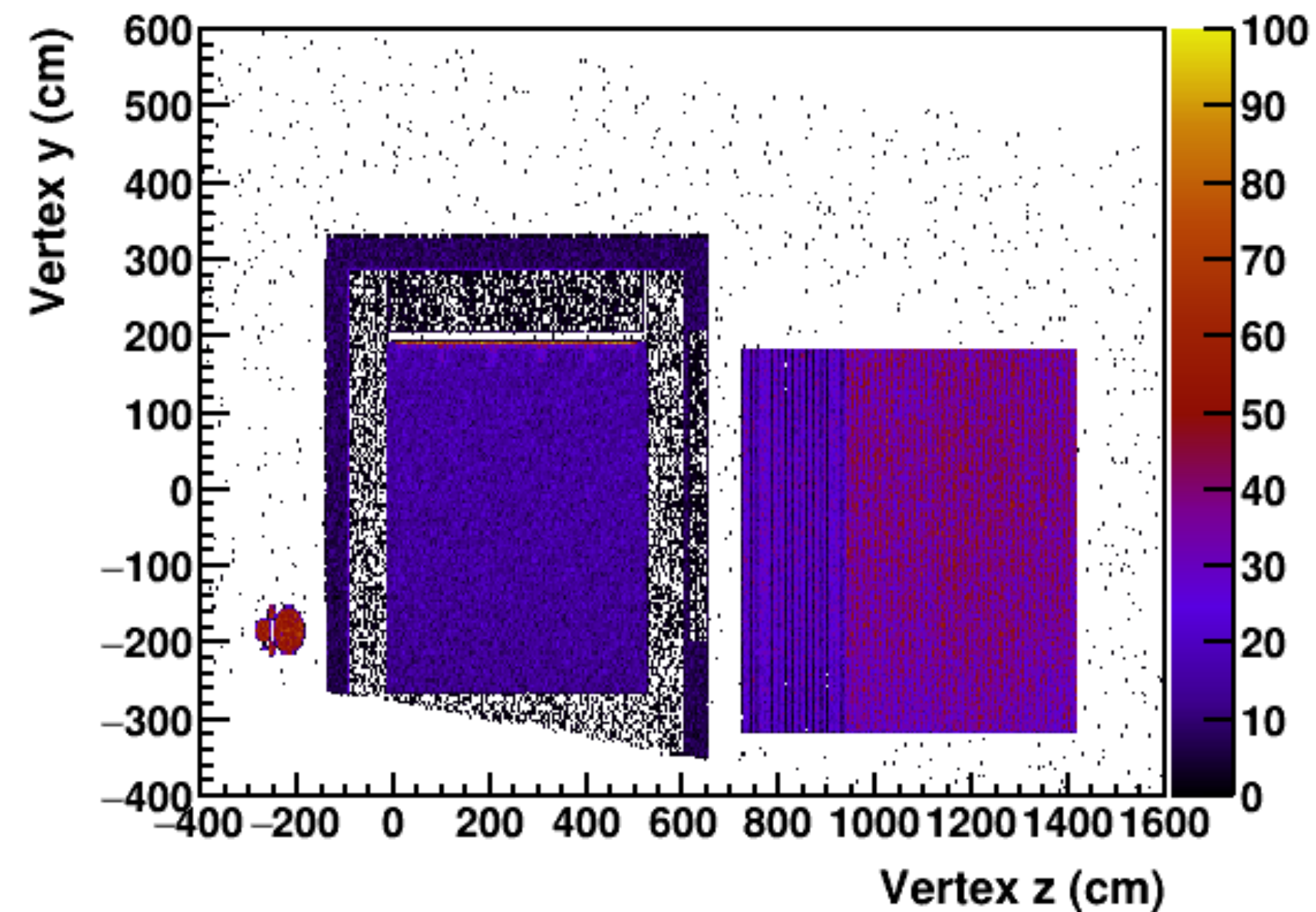# What have we been up to?

- We want to use Production tools to produce official files for ND TDR

- We asked subgroups:

  - Fill in a <u>Spreadsheet with file requests</u>

  - Commit production version of geometries to DUNE github.

  - Finalize and report Edep-sim version and configuration.

  - Demonstrate SAM integration in workflow.

  - Produce workflow documentation for production. to Flux version: same as FD TDR

- GENIE 2.12.10: same as FD TDR (BSM group requested GENIE 3)

- ND-GAr and ND-LAr have verified SAM integration

- We are getting ready to run a MiniProduction to exercise the machinery and validation

L. Cremonesi

Hits in active volumes (YZ)

- z = 0 is upstream face of LAr active volume

- Beam axis goes through ~center of 1.5cm region of TMS

Chris Marshall

UNIVERSITY of ROCHESTER

DUNE

Queen Mary
University of London

L. Cremonesi

Interaction vertex position

- Passive argon, plumbing, insulation, steel structure, composite window are all clearly visible

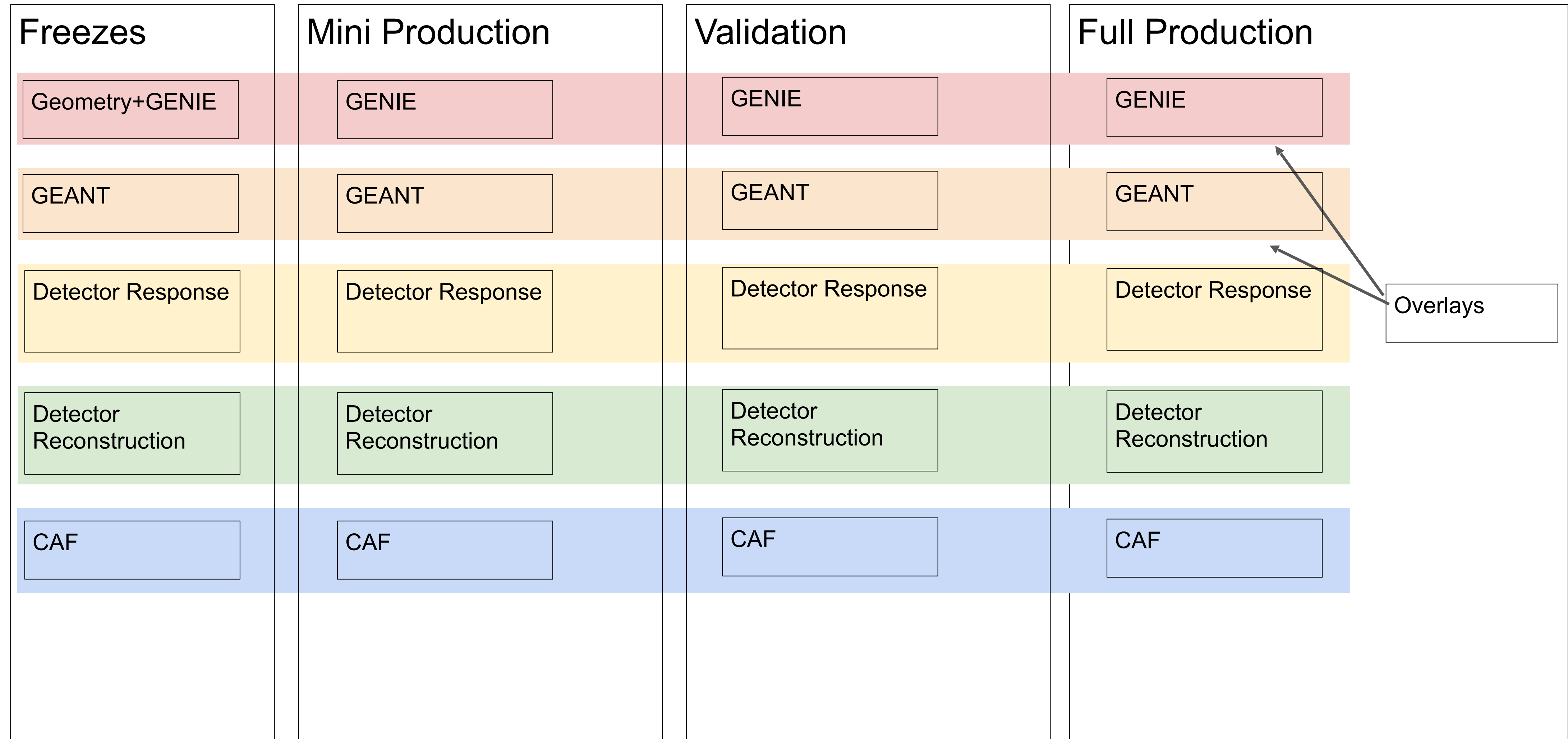- Steel structure of TMS is consistent with drawings

Chris Marshall

L. Cremonesi

Production benchmarking

- Ran 1e19 POT FHC validation (~2.5 days) on the whole LAr+TMS geometry (~23M events)

- GENIE + edep-sim + CAFMaker

- edep-sim output file sizes are now understood:

  - LAr active = 4.5 TB per 1E20 POT

  - TMS = 25 TB per 1E20 POT

- edep-sim output files are here:

  - /pnfs/dune/scratch/users/marshalc/geomValHallLArTMS2/edep/0m/00/

Chris Marshall

UNIVERSITY of ROCHESTER

L. Cremonesi

Production Process

Freezes	Mini Production	Validation	Full Production
Geometry+GENIE	GENIE	GENIE	GENIE
GEANT	GEANT	GEANT	GEANT
Detector Response	Detector Response	Detector Response	Detector Response
Detector Reconstruction	Detector Reconstruction	Detector Reconstruction	Detector Reconstruction
CAF	CAF	CAF	CAF

Overlays

Queen Mary
University of London

L. Cremonesi

Status of freezes

Freezes	ND-LAr + TMS	ND-GAr	SAND
Geometry+GENIE	Ready	Ready	Waiting for inner tracker decision
GEANT	Ready	Ready	Ready
Detector Response	Ready for ND-LAr	Ready for ND-LAr	Waiting for inner tracker decision
Detector Reconstruction	Under active development	Under active development	Waiting for inner tracker decision
CAF			

Queen Mary
University of London

L. Cremonesi

MiniProduction 1

- Up to edep-sim

- 1e19 POT

- Priority samples: interactions in ND-LAr volume:

  - Hall + ND-LAr + TMS

  - Hall + ND-LAr + ND-GAr

  - Rock

- Results from MiniProduction will allow use to set more realistic timelines and priorities for our full list of production request

L. Cremonesi

Current status and plan

- Jinghuang is remaking gsimple flux files

- We are making a repository with all of the configuration files

- Hopefully ready to go for MiniProduction next week

- Next week collaboration meeting:

  - ND Reco/Sim session Wednesday at 8am

  - ND Reco/Sim + Computing session Thursday at noon

L. Cremonesi