Last week:

Patched up PhotonSim -> LUCiD pipeline after Omar's refactor.
Modified PhotonSim to be able to work with neutrino generator (GENIE).
Modified PhotonSim + LUCiD to be able to generate "pile-up" events (either GENIE of pgun)
Developed LUCiD container (GENIE+ROOT+GEANT4+Python libs+PhotonSim+LUCiD)
Moved S3DF "production scripts" to be container based.
Added CIs to LUCiD (container rebuild + visual check + speed test).

This week:
Cleaned up old voxelization logic from LUCiD (subset of information now stored via segments).
Introduced "bucketing logic" to bound maximum compute per event and validated with 100 GeV electrons shower.
Fixed bugs in LUCiD viewer (label indexing was broken)
Added metadata to LUCiD viewer.
Added new visualization modes to the viewer (PDG, Cherenkov beta).
Massive pipeline refactor: change labeling to be fully downstream (derived view of most granular information, as opposed to calculate labels upstream and propagate).
Improving timing performance after all changes and pipeline refactor (next slide).

PhotonSim

dataprod_01_mu

commit	wall	per-event mean
abb0304	23.25	1.080
7ddd283	15.94	0.710
54f2e2f	15.42	0.685
9749257	**14.47**	**0.645**

LUCiD

dataprod_01_mu (muon, single-vertex)

commit	init	simulate	post_jax	meta_contain
abb0304 (baseline)	93.3	5.52	0.002	0.001
7ddd283 (regression)	106.3	11.52	**2.92**	**0.244**
54f2e2f (JIT-aggregator fix)	111.5	3.80	0.90	0.40
9749257 (sparse)	**67.5**	**2.17**	**0.029**	**0.001**

Metrics on Git CI show 0-5s for configurations of interest —> max 14k CPU.
Currently donig final performance tests in S3DF to report memory and compute needs per configuration.