News and issues

- TPC sim/reco productions: need requirements for additional samples
  - lots of data simulated by Pawel and Jiyeon for hadronic shower reconstruction:

    /pnfs/dune/scratch/users/jyhan/v06_05_00/
  - Andrea Scarpelli found that showers reconstruction algorithms were not enabled in ProtoDUNE-SP MCC7.
  - realistic beam simulation is on the way (more in next slides).
- G4 ProtoDUNE geometry (Martin, Elisabeth).
- Reconstruction efficiency of cosmic muons. Reconstruction of beam particle event in presence of cosmic muons (Leigh – update today).
- Hadronic shower reconstruction (progressing, no updates today).
- EM/Track separation is progressing (more in next slides).

LArSoft reconstruction for dual phase

Very preliminary, discussions on sharing the efforts starting – will circulate info to coordinate with all interested in:

- Hit reconstruction for DP, metrics (Kerem Cankocak).
- Shower reconstruction, metrics, electron/photon separation (Andrea Scarpelli).
- Cluster, track efficiencies (Christoph Alt).
- Need geometries for 3x1x1, ProtoDUNE.
- In order to compare with Qscan, or apply LArSoft algorithms to data – need to read in data in Qscan format.

Update on H2/H4 simulation, communication with Thomas and Nikos

- Make more realistic (but still not final) simulation of the beam using root files available at: /eos/neutplatform/experiments/ProtoDUNEsBeams/

  → Currently I am trying to do it. Now the machinery can be put in place, in order to use beam particles in TPC simulation.

- *Middle* beam window is now used.
- Correct beam composition, beam is modelled only in *horizontal* plane (in the reality beam is also turning *vertically*).
- Missing muon halo: full shielding/material around the beam line is under discussion with Radiation Protection and other services.

Nearline Monitoring for ProtoDUNE

Voica, Nektarios:

- Find the set of metrics which can be used to monitor data quality: channel hit occupancies, mean/RMS ADC
  - investigate possibility of using higher level reconstruction
  - find metrics sensitive to beam particles
- Use as much as possible 35t, LArIAT experience.
- Understand the place and kind of interface to DAQ – at which point data is passed, which results and how are stored in databases…

Update on EM/Track separation

- We have access to GTX 1080 GPU at TechLAB at CERN, with CUDA 8.0. Soon more GPU at CERN from Neutrino Platform funds, thanks to Marzio Nessi and Albert de Roeck.
- Working together with LHC group also interested in DL for their reco.
- Thanks to Thomas Kutter we have also access to the cluster at LSU (50 Compute Nodes, NVIDIA M2090) → very helpful to optimize models.
- Data dumps, training set and first network models ready with different configurations → currently we focus on testing separation efficiencies and EM component analysis code. Results should be ready for the next meeting.
  (ref: https://indico.fnal.gov/getFile.py/access?contribId=1&resId=0&materialId=slides&confId=13135).
- Jason and Samuel are working on LArIAT data → use the same tools as in ProtoDUNE.