DUNE concerns--HEPCloud

Known HPC use cases

- Near Detector simulation and reconstruction
  - MLReco used in both—must run on GPU
    - Simulation (and reco) done so far is 1% of yearly simulation needed
    - Estimated 25000 CPU hr, 45000 GPU hr this next year
- Far Detector reco and analysis
  - Wirecell low level reco has ML elements
  - Analysis—michel electrons vs. other electrons, also ML-driven.. Can use inference server
- Supernova pointing
  - Several methods in DUNE right now but all of them involve getting O(200)TB to a supercomputing center within a couple hours.
- Normal MC simulation for far detector
  - Expecting to do some of this yet this year.

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DUNE priorities

- ALCF staff invited us to write a white paper on DUNE HPC use cases @ Argonne

- This is in progress (joint with CMS)

- Bulk file transfer into and out of ALCF, OLCF

  - Need lab to take clear position on Globus

  - Need to know who all is working on this problem and their relative responsibilities

    - Different pieces of HEP-CCE, CSAID, HEPCloud, Rucio developers, …..

- Near detector gives us a big GPU use case, interesting to leadership facilities.

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