Update on Titan activities

Danila Oleynik (UTA)
Sergey Panitkin (BNL)

ATLAS releases on Titan

- ATLAS software installed on shared filesystem on Titan using pacman
- Releases, database, release compiler installation using pacman
  - Worked very well !
  - Releases, 17.2.12, 17.2.11.15, 18.9.0, 19.2.0,…
- Release installation is highly scriptable procedure
- Install queue defined
- Tested release install on Titan
  - Breaks at DB installation (interactive mode in pacman)

New ATLAS Workloads on Titan I

- Receive request from Prof. R. Konoplich (NYU/Manhattan Col./Carleton U.) to run large scale H->ZZ->4l sample for VBF analysis
- Standalone Powheg simulation on Titan already produced ~16M events for evaluation/validation
- Validation looks good so far
- Final goal is to generate ~100M events
- We were also asked to include Pythia showering, since this step was slow on the Grid (no manpower)
- Tested Pythia showering for Powheg events, with Reco_trf for TRUTH file production
  - This chain will use rel. 18.9.0
  - Can submit EvGen and showering simultaneously and then run consequently, with conditional submission mechanism on Titan
- 12M (full chain) TRUTH events produced so far

New ATLAS Workloads on Titan II

- Collaboration with George Redlinger (BNL) to run simulations for ATLAS SUSY analysis

  H->bb+MET

- Again port of the Grid simulation chain to Titan
  - Generate_trf.py (tested)
  - AtlasG4_trf.py (tested)
  - Merging_trf.py (issue with conditions DB on Titan)
  - DigiMReco_trf.py
  - Reco_trf.py

New Workloads on Titan III

- Collaboration with theorist Bjoern Schenke (BNL)
- MUSIC - State of the art hydro-dynamical model for RHIC and LHC, with Lattice QCD motivated EOS, realistic initial conditions, viscosity, hadron phase freeze-out, etc
- Very CPU intensive
- The initial thrust is to do calculation in support of beam energy scan program at RHIC
- But the code can be ran at LHC energies as well, so it's of eventual interest for ATLAS heavy ion group
- Code ported to Titan, simple test ran, to be validated

Summary

- We are in pretty good shape with ATLAS specific workloads on current Cray machines
- Good integration with PanDA pilot for HPC
- Can run HEP workloads as MPI groups on HPC
- Can install any ATLAS release necessary
- Ran several EvGen simulation chains
- Started collaboration with several ATLAS groups
  - Helps with quick validation of results from HPC
- New collaboration with nuclear theorist at BNL that is of interest for RHIC and LHC heavy ion program