OAK RIDGE National Laboratory

sPHENIX-Acts Implementation

Joe Osborn

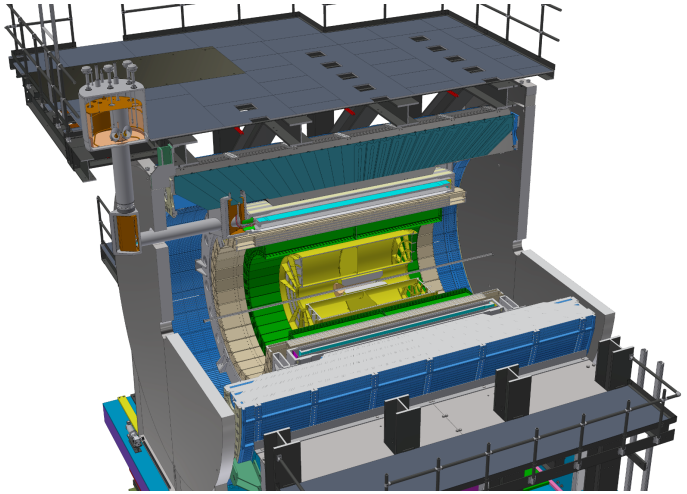
February 24, 2021

ORNL is managed by UT-Battelle, LLC
for the US Department of Energy

U.S. DEPARTMENT OF ENERGY

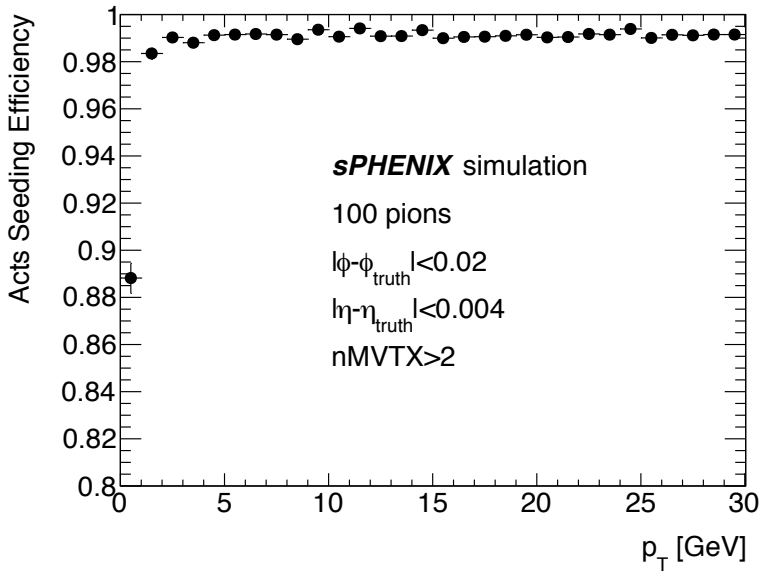
sPHENIX and Acts

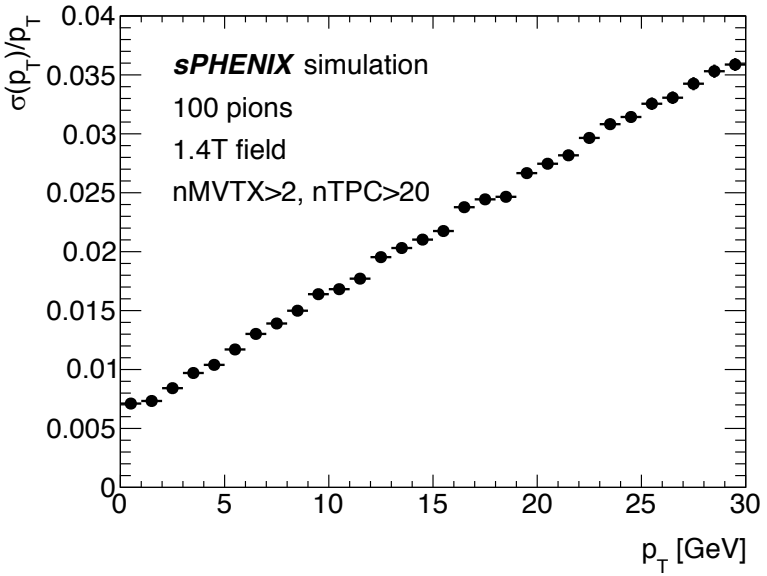
- sPHENIX tracking has 5 silicon layers and a compact TPC for track reconstruction
- sPHENIX project made the decision to switch from GenFit to Acts ~1 year ago
- Recently switched to Acts as default track fitter for physics analyzers
- sPHENIX currently using Acts
  - Vertex finding/fitting
  - Seeding
  - Track fitting



sPHENIX-Acts Performance

- Most track fitting tuning has been focused on low occupancy events (for sPHENIX, not EIC)
- Track reconstruction performance is stable and meeting sPHENIX physics goals in these environments
- Further improvements ongoing, including
  - High occupancy development/tuning
  - TPC space charge distortions





OAK RIDGE National Laboratory

Relation to EIC Software EoI

- Reconstruction:
  - "In particular, we will gain expertise with ACTS (A common tracking software) which encapsulates the ATLAS track reconstruction software into a generic, framework- and experiment-independent software package"
    - Community wide expertise growing with Acts functionality
  - "We intend to approach reconstruction with a focus on modularity."
    - sPHENIX tracking developers have focused on modular track reconstruction, so that various classes can be swapped in and out to test performance and so that concurrent software development is enabled