First Look at ACTS in Marlin

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Why ACTS for MCC?

ACTS GitHub

ACTS is a generic library for track fitting at collider experiments.

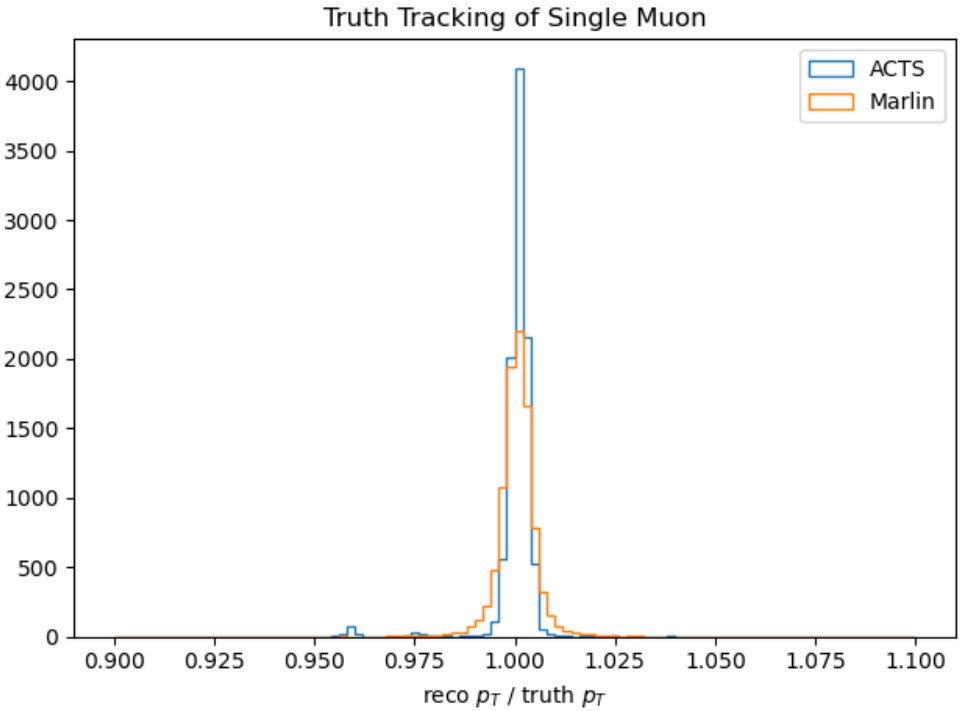
- **Dedicated team working on advancing tracking algorithms**
  - Tracking is hard!
- **Allows us explore alternate algorithms**
  - Triplet-based seeding optimized for high multiplicity environments
- **Code optimization come for free**
  - Also explores modern computing architectures (ie: CUDA)

Current Status

GitLab: ACTSTracking

- **Implemented truth tracking using ACTS in a Marlin Processor**
  - Based on TruthTrackFinder processor
  - Using truth as initial parameters (also enabled in Marlin)
  - Not yet feature equivalent (ie: track state only at IP, no hit associations)

Fit Library	Execution Time
ACTS	1 ms / evt
Marlin	140 ms / evt
Marlin (w/o init param)	150 ms / evt



Next Steps

- Implement seeding + combinational kalman filter in Marlin
- Run performance studies on events with BIB
- Contribution to the APS Muon Collider Symposium