Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Tracking with ACTS for a Muon Collider detector KAROL KRIZKA, SIMONE PAGAN GRISO, Lawrence Berkeley National Laboratory, TOMOHIRO YAMAZAKI, UC Berkeley, HEATHER GRAY, UC Berkeley and LBNL, PHILIP CHANG, UCSD, DONATELLA LUCCHESI, INFN Padua and University of Padua, NAZAR BARTOSIK, INFN Turin, MASSIMO CASARSA, INFN Trieste and University of Trieste, SERGO JINDARIANI, HANNSJOERG WEBER, Fermilab, LAWRENCE LEE, Harvard University, FEDERICO MELONI, DESY — Charged particle trajectory reconstruction at a Muon Collider detector is more similar to the hadron collider environment than an electron collider. The presence of the beam-induced background leaves a large hit multiplicity in the tracking detector that complicates the pattern recognition stage of track reconstruction. The BIB hits increase the possible hit combinations that need to be filtered to create valid track candidates. This is analogous to the problem from pile-up hits in an hadron collider detector. The A Common Tracking Software (ACTS) is a library that implements the tracking algorithms developed by the collider tracking community, with a particular focus on hadronic environments. In addition to clever algorithms, it further tackles the tracking performance issue by heavily optimizing the code and exploring novel computing architectures. Due to the experiment-independent design, ACTS allows other experiments to leverage their complex tracking algorithms in different settings. This contribution will explore the usage of ACTS to perform the track reconstruction for simulated muon collider events with full beam-induced background.

Simone Pagan Griso
Lawrence Berkeley National Laboratory

Date submitted: 08 Jan 2021 Electronic form version 1.4