



Contribution ID: 345

Type: **Poster presentation**

The Reconstruction Software for the Muon Ionisation Cooling Experiment Trackers

Monday, October 14, 2013 3:00 PM (45 minutes)

The international Muon Ionisation Cooling Experiment (MICE) is designed to demonstrate the principle of muon ionisation cooling for the first time, for application to a future Neutrino Factory or Muon Collider. In order to measure the change in beam emittance, MICE is equipped with a pair of high precision scintillating fibre trackers. The trackers are required to measure a 10% change in beam emittance to 1% accuracy (giving an overall emittance measurement of 0.1%).

This paper describes the tracker reconstruction software, as a part of the overall MICE software framework, MAUS. The process of producing fibre digits is described for both the GEANT4 based Monte Carlo case, and for real data. Fibre clustering is described, proceeding to the formation of spacepoints, which are then associated with particle tracks using pattern recognition algorithms. Finally a full custom Kalman track fit is performed, to account for energy loss and multiple scattering. Exemplar results are shown for both Monte Carlo and cosmic ray data.

Primary author: DOBBS, Adam (Imperial College London)

Co-authors: HEIDT, Christopher (University of California Riverside); ADEY, David (Fermilab); SANTOS, Edward (Imperial College); HANLET, Pierrick (Illinois Institute of Technology)

Presenter: HANLET, Pierrick (Illinois Institute of Technology)

Session Classification: Poster presentations

Track Classification: Event Processing, Simulation and Analysis