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ID: 4926 - MOPZ036 Multiple Scattering Measurements in MICE Step IV

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Abstract The international Muon Ionization Cooling Experiment (MICE), under development at RAL, will test and characterize a prototype cooling channel for a future Neutrino Factory or Muon Collider. The cooling channel aims to achieve, using liquid hydrogen absorbers, a 10% reduction in transverse emittance. The change in 4D beam emittance will be determined to a relative accuracy of 1% by measuring muons individually with a set of particle physics detectors. These include two scintillating fibre trackers embedded within 4 T solenoid fields, TOF counters and a Muon ranger. Step IV of MICE will begin in 2012, producing the experiment's first precise emittance reduction measurements. Multiple scattering in candidate Step IV absorber materials was studied in G4MICE, based on GEANT4. Equilibrium emittances for low Z materials from Hydrogen to Aluminium can be studied experimentally in Step IV of MICE, and compared with theories.

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Main Classification 03 Linear Colliders, Lepton Accelerators and New Acceleration Techniques

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