Abstract Submitted
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Measurements of Beam Cooling in Muon Ionization Cooling Experiment[1] TANAZ MOHAYAI, PAVEL SNOPOK, Illinois Institute of Technology, U.S., CHRIS ROGERS, Science and Technology Facilities Council, U.K., DAVID NEUFFER , Fermilab, U.S., MUON IONIZATION COOLING EXPERIMENT COLLABORATION — Cooled muon beams are essential for production of high-flux neutrino beams at the Neutrino Factory and high luminosity muon beams at the Muon Collider. The international Muon Ionization Cooling Experiment, MICE aims to demonstrate muon beam cooling through ionization energy loss of muons in material. The standard figure of merit for cooling in MICE is the transverse RMS emittance reduction and to measure this, the individual muon positions and momenta are reconstructed using scintillating-fiber tracking detectors, before and after a low-Z absorbing material. In this study, in addition to a preview on the standard measurement technique, an alternative technique is described, which is the measurement of phase-space density using the novel Kernel Density Estimation method.

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