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The MICE beamline instrumentation for a precise emittance measurement

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The International Muon Ionization Cooling Experiment (MICE) will carry out a systematic investigation of ionization cooling of a muon beam, for the future Neutrino Factory and the Muon Collider.
As the emittance measurement willbe done on a particle-by-particle basis, a sophisticated beam instrumentation
is needed to measure both particle coordinates and timing vs RF in a harsh environment due to high particle rates, fringe magnetic fields and RF backgrounds. A PID system, based on three time-of-flight stations (with resolutions up to 50 ps), two Aerogel Cerenkov counters and a KLOE-like calorimeter (KL) has been constructed and has allowed the commissioning of the MICE muon beamline in 2010. It will be followed in 2012 by an
Electron Muon Ranger to determine the muon range at its downstream end and later by two tracker detectors to trace incoming particles inside two high-field superconducting solenoids.
Detector performances will be shown and their use for the beamline characterization fully illustrated.

for the collaboration

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