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Progress of the MICE experiment

Muon beams of low emittance provide the basis for the Neutrino Factory and the Muon Collider. The international Muon Ionization Cooling Experiment (MICE) will demonstrate the reduction through ionization cooling of the phase-space volume occupied by a muon beam. Ionization cooling combines isotropic deceleration by absorbing materials with RF acceleration in the beam direction.

MICE is being constructed in a series of steps. Starting this summer, Step IV will allow the properties of absorber materials, liquid hydrogen and lithium hydride, to be studied.

Subsequently, the configuration required to demonstrate ionization cooling will be implemented by September 2017. In this configuration, a central lithium hydride absorber will provide the main cooling effect, two superconducting focus-coil modules will provide the magnetic lattice and acceleration will be provided by two 201 MHz singlecavity RF modules. The status, performance, plan of measurements and ultimate reach will be described.

additional information

This is an abstract aiming at a talk in the accelerator session supported by two ancillary abstracts for two posters in the same session.

The three are submitted by the chair of the Speakers Bureau of the MICE collaboration as a coherent set of contributions. The Bureau will identify a member of the collaboration to present each accepted contribution.

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