

Muon Ionization Cooling Experiment Step VI
P. Snopok on behalf of the MICE collaboration

The Muon Ionization Cooling Experiment (MICE) is a demonstration experiment to prove the viability of cooling a beam of muons for use in a Neutrino Factory and Muon Collider. The ultimate Step VI configuration of the MICE cooling channel, a section of the one proposed in the Neutrino Factory Study II, will demonstrate a 10% reduction in transverse beam emittance measured at the level of 1%. This requires measuring emittance to 0.1%. This measurement will be made using all beam line elements present in the MICE Step IV configuration with the addition of two low-Z absorber modules and two RF-Coupling Coil (RFCC) modules. The RFCC modules each contain four normal-conducting low frequency (201 MHz) RF cavities with a guiding magnetic field provided by a large Diameter coupling coil. Each of these cavities will require approximately 1 MW of RF power in a 1 ms pulse at a rate of 1 Hz. The experiment can explore a variety of combinations of momentum, beta function, magnetic field flip or non-flip configurations that will prove precious in the design of future cooling channels.

The current status and progress towards Step VI are discussed.