

A Demonstrator For Muon Ionisation Cooling

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The muon collider is an excellent prospect as a multi-TeV lepton collider, with the possibility for high luminosity and reach to 10 TeV or more. In order to realise such luminosity, high beam brightness is required. Ionisation cooling, which was demonstrated recently by the Muon Ionization Cooling Experiment (MICE), is the technique proposed to realise sufficient brightness. MICE demonstrated transverse emittance reduction of incident beams having relatively high emittance and without beam reacceleration. The international Muon Collider Collaboration proposes a Demonstrator for Muon Cooling that will demonstrate six-dimensional emittance reduction over a number of cooling cells, operating at beam emittance close to the ultimate goal for the muon collider. Together with a full R&D programme this will pave the way for construction of a muon collider. In this paper, initial considerations and possible implementations for the demonstrator are discussed.

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