

Normalized Transverse Emittance Reduction via Ionization Cooling in MICE 'Flip Mode'

Thursday 9 September 2021 14:50 (20 minutes)

Low emittance muon beams are central to the development of a Muon Collider and can significantly enhance the performance of a Neutrino Factory. The international Muon Ionization Cooling Experiment (MICE) has recorded several million individual muon tracks passing through a liquid hydrogen or a lithium hydride absorber and has demonstrated the ionization cooling of muon beams.

Previous analysis used a restricted data set, and the beam matching was not perfect. In this analysis, beam sampling routines were employed to account for imperfections in beam matching at the entrance into the cooling channel and enable an improvement of the cooling measurement. A study of the normalized transverse emittance change in the MICE cooling channel set up in a flipped polarity magnetic field configuration is presented. Additionally, the evolution of the canonical angular momentum across the absorber is shown and the characteristics of the cooling effect are discussed.

Working group

WG3

Primary authors: JURJ, paul (Imperial College London); PALLADINO, Vittorio (Universita e sezione INFN di Napoli (IT))

Presenter: PASTERNAK, Jaroslaw (Imperial College, London)

Session Classification: WG 3