Contribution ID: **100** Type: **not specified**

Studies on new, high-performance, 6-Dimensional ionization cooling lattices for Muon Accelerators

An ionization cooling channel is a tightly spaced lattice containing absorbers for reducing the momentum of the muon beam, rf cavities for restoring the longitudinal momentum and solenoids for focusing the beam. Such a lattice is an essential step for a Muon Collider. Here, we explore two different schemes for designing ionization cooling channels for muon related applications. The first is an upward helical lattice commonly known as the Guggenheim channel. The second is a novel linear channel with either wedge or block absorbers for cooling and tilted solenoids for emittance exchange. The latter scheme addresses several of the engineering challenges of a conventional Guggenheim channel. We incorporate both schemes into a new lattice design for a muon collider, and examine their performance numerically. We optimize the designs and compare the conductor current densities requirements for all of the simulated scenarios.

Primary author: Dr STRATAKIS, Diktys (Brookhaven National Laboratory)

Co-authors: Dr BERG, J. Scott (Brookhaven National Laboratory); Dr FERNOW, Richard (Brookhaven National Laboratory); Dr PALMER, Robert (Brookhaven National Laboratory)

Presenter: Dr STRATAKIS, Diktys (Brookhaven National Laboratory)

Track Classification: Accelerator Physics