**Novel High field - low energy ionization cooling channel**

**Abstract:**

Muon beams are generated with inherited large transverse and longitudinal emittances. In order to achieve low emittance within the short lifetime of the muons, the only feasible cooling scheme is the ionization cooling. In this study we present a design and simulation of a novel ionization cooling channel. The channel operates at a very strong magnetic fields of 25-30 T with low muon beam energy starting from 66 MeV and decreasing gradually. We study the beam dynamics of such low energy beam in high field region inside and between cooling stages. Key design parameters will be presented and in addition the performance and channel requirements of RF cavities and high field magnets will be presented.

**Summary:**