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Review of Ionization Cooling

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Ionization cooling is a key concept for reducing beam emittance within muon lifetime and has been developed and experimentally demonstrated over the past three decades. These studies have highlighted important constraints and design challenges for practical cooling channels. Following the recommendations from the latest P5, collaboration with the IMCC has been encouraged, resuming efforts toward designing a viable muon collider. In this presentation, we provide a comprehensive review of previous studies on ionization cooling, discuss the identified constraints on ionization cooling channel designs, and introduce a few novel cooling concepts which potentially overcome these limitations.

Footnotes

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