Contribution ID: **1219** Type: **Parallel session talk**

Final Cooling with Thick Wedges for a Muon Collider

Friday 19 July 2024 11:21 (18 minutes)

A 10 TeV muon collider has the potential to directly search for new physics and uniquely probe electroweak SM properties. An important component of such a collider is cooling, in which a cloud of muons is converted into a beam. In the last stage of this process called final cooling, emittance decreases in the transverse axes while increasing in the longitudinal axis. This step is critical to deliver the needed luminosity for physics goals. Previously, final cooling designs assumed absorbers within high field solenoids. Simulations with realistic magnets did not reach the desired cooling goals. We show a different design for final cooling based on single thick wedges, which has the potential to achieve cooling goals with existing magnet technology. We investigate both machine learning techniques and classical methods to optimize the parameters and achieve lower emittances than published results. We show the feasibility of wedge-based cooling and motivate future studies.

Alternate track

I read the instructions above

Yes

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