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Considerations of HTS Rapid-Cycling Magnets for Staged Muon Acceleration

Wednesday 13 August 2025 16:00 (2 hours)

The HTS conductor hysteresis dominates magnet cable power loss but is independent of the magnetic field ramping rate. This makes the HTS conductor suitable to power the rapid-cycling accelerator magnet. We present a possible application of the HTS rapid-cycling magnet as outlined in [1,2] for the staged muon acceleration including the front-end Recirculating Linear Accelerator and the followed-up Rapid Cycling Synchrotrons delivering the muon beams to the Muon Collider.
[1] H. Piekarz, S. Otten, A. Kario, H. ten Kate, "Rapid-cycling HTS magnet for muon acceleration", US MC Inaugural Meeting, FERMILAB-POSTER-24-0219-AD, August 7-9, 2024
[2] H. Piekarz, B. Claypool, S. Hays, M. Kufer, V. Shiltsev, "Record High Ramping Rates in HTS Based Supercond. Accelerator Magnet", MT 27, IEEE Trans. on Applied Superccond, 32 (2022) 6, 4100404

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No

Footnotes

Funding Agency

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