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# A Double Bend Achromat Hybrid Pulsed Synchrotron Lattice for Accelerating Muons to 5 TeV

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To reach the desired energy for a muon collider, muons should be accelerated to 5 TeV. This acceleration must be rapid to avoid muon decays, while simultaneously having a high average bending field to minimize the the required RF voltage. One concern with high energy muons is radiation from neutrinos, produced from muon decay, interacting with matter far from the accelerator. While this is less of a concern for acceration than for the collider ring, maximizing the number of straight sections in the acceleration ring would minimize this radiation. Doing so requires minimizing the length of the arcs while maintaining zero dispersion through the RF cavities. The most compact cell that would accomplish this would be a double bend achromat (DBA). I present a double-bend achromat lattice cell for muon acceleration in a hybrid pulsed synchrotron. "Hybrid" refers to the use of a mixture of superconducting fixed field magnets and bipolar pulsed warm dipoles to maintain a high average bending field. The design considers the required magnet aperture for the beam size and an estimate for shielding. I will discuss the longitudinal dynamics for this design.

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## Footnotes

## I have read and accept the Privacy Policy Statement

Yes

**Primary author:** BERG, J. (Brookhaven National Laboratory)

**Presenter:** BERG, J. (Brookhaven National Laboratory)

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