

# Accelerator Physics and Technology Seminar

## Accelerating Muons to TeV Scale Energies on the Fermilab Site

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**Date:** Tuesday, February 6

**When:** 4:00 pm CST

**Where:** One West (WH1W) and Zoom

**Abstract:** Compared with a proton collider, a muon collider can achieve the same energy reach with roughly one tenth of the energy. A muon collider would thus be an attractive option for performing energy frontier collider physics on the Fermilab site. Physics discussions and studies have identified roughly 10 TeV as the center of mass energy of interest. The collider ring for that energy fits easily on the Fermilab site, but the challenge lies fitting the accelerator that will reach those energies on the site. The difficulty arises because the muons must be accelerated rapidly to avoid decays, and as a consequence the average bending field in the accelerating ring will be relatively low. I will discuss two acceleration methods for high energy muons and their challenges: pulsed synchrotrons with a hybrid dipole configuration, and fixed field alternating gradient accelerators. I will discuss parameter tradeoffs in the accelerator design. I will show some rough initial lattice designs to give an idea of what sorts of energies can be achieved with given magnet technologies.