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Resonant Extraction and Extinction Measurement for the Mu2e Experiment

Wednesday, July 29, 2020 7:00 PM (20 minutes)

The Mu2e experiment, currently under construction at Fermilab, will search for coherent neutrinoless muon to electron conversion, extending the sensitivity of searches for charged lepton flavor violation by four orders of magnitude in 3-5 years of data-taking. This improved sensitivity is made possible by using a pulsed beam structure that is optimized for reducing prompt backgrounds when muons are stopped on an aluminum target. Producing a high-rate pulsed beam is achieved using resonant extraction of a circulating proton beam, an "AC dipole"with a time-varying field to deflect out-of-time protons, and a system to measure the extinction of out-of-time beam particles incident on the muon production target. This talk summarizes the systems that have been designed to achieve the required level of extinction and to continuously place limits on the presence of out-of-time beam hitting the production target with a sensitivity of <1e-10.

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03

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