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The Mu2e Solenoid Cold Mass Position Monitor System

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The Mu2e experiment at Fermilab is designed to search for charged-lepton flavor violation by looking for muon to electron conversions in the field of the nucleus. The concept of the experiment is to generate a low momentum muon beam, stopping the muons in a target and measuring the momentum of the conversion electrons. The implementation of this approach utilizes a complex magnetic field composed of graded solenoidal and toroidal fields. The location of the solenoid cold mass relative to external fiducials are needed for alignment as well as monitoring coil movements during cool down and magnet excitation. This paper describes a novel design of a Cold Mass Position Monitor System that will be implemented for the Mu2e experiment.

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