

Kick-off workshop for the search of a muon EDM using the frozen spin technique at PSI

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Radial magnetic field measurements in the Muon g-2 experiment at FNAL

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The muon g-2 experiment at Fermi National Accelerator Laboratory (FNAL E989) is using a super-ferric magnet to generate the nominally vertical precision magnetic field of 1.45 T which confines the muon beam in the horizontal plane (radial direction). A segmented electrostatic quadrupole system is employed to prevent the muon beam from spiraling out of the storage region in the vertical direction and to center the muon beam in the nominal storage orbit volume defined by physical beam collimators. A non-vanishing horizontal magnetic field component displaces the muon beam center from the geometric center of the muon storage region, shrinking the effective muon storage volume and leading to complications in the control of several systematic effects related to the dynamics of the muon beam. The presentation will describe the instrumentation developed to measure the radial magnetic field during the commissioning of the muon storage ring magnet, the passive means implemented to reduce the averaged radial magnetic field component, and the surface coil current system used to actively compensate the radial field components during science data run time.

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