



ID de Contribution: 79

Type: Non spécifié

Status of J-PARC Muon $g-2$ /EDM experiment

mercredi 29 mars 2023 09:00 (15 minutes)

Preparations of a new experiment which aims to measure the muon's anomalous magnetic moment ($g-2$) and its electric dipole moment (EDM) at the J-PARC muon facility at MLF, MUSE, are underway.

Apart from conventional experimental method as E821(BNL) or E989(FNAL), dedicated muon beam line, we have developed a brand-new experimental method, and we expect the sensitivity goal is 0.46 parts per million (ppm) in the beginning (~2028), aiming for 0.1 ppm as a ultimate goal.

In this presentation, overview of new challenges of very low-emittance muon beam line, beam storage method in MRI-sized storage magnet and tracking detector which realize reconstruction of muon beam's motion in the precisely adjusted magnetic field, as well as a current status of beam line construction.

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Classification de Session: High Energy Astrophysics & Particle Physics

Classification de thématique: Particle Physics