Contribution ID: **1906** Contribution code: **MOPA118** Type: **Poster Presentation**

Demonstration of three-dimensional spiral injection for the J-PARC muon g-2/EDM experiment

Monday, 8 May 2023 16:30 (2 hours)

In the J-PARC Muon g-2/EDM experiment, to measure muon g-2 and EDM, it is necessary to accumulate 300 MeV/c muon beams with a 66 cm diameter region with a 3 T solenoid-type magnetic field. A new three-dimensional spiral injection scheme has been invented to achieve this target. Since this is the first instance to employ this injection scheme, a scale-down experiment with an electron beam of 297 keV/c and storage beam diameter of 24 cm is established at KEK. A simplified storage beam monitor using scintillating fiber has been designed and fabricated to measure the stored beam. The 100 nanosecond width pulsed beam is injected and observed a few microsecond signals by stored beam monitor. According to this result, the beam storage is confirmed. And the recent result shows that the stored beam deviated from the design orbit and caused betatron oscillations. To measure the beam deviation quantitatively and tune the beam, the storage monitor has been updated. The data from this stored beam monitor are the primary data for considering the conceptual design of the beam monitor for the Muon g-2/EDM experiment. This talk will discuss the measurement of beam storage by three-dimensional spiral injection and beam tuning using a scintillating fiber monitor.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: MATSUSHITA, Ryota (The University of Tokyo)

Co-authors: FURUKAWA, Kazuro (High Energy Accelerator Research Organization); IINUMA, Hiromi (Ibaraki University); MIBE, Tsutomu (High Energy Accelerator Research Organization); NAKAYAMA, Hisayoshi (High Energy Accelerator Research Organization); ODA, Kodai (Ibaraki University); OGAWA, Shinji (Kyushu University); OHSAWA, Satoshi (High Energy Accelerator Research Organization); REHMAN, Muhammad Abdul (High Energy Accelerator Research Organization); SAITO, Naohito (High Energy Accelerator Research Organization)

Presenter: MATSUSHITA, Ryota (The University of Tokyo)

Session Classification: Monday Poster Session

Track Classification: MC1: Colliders and other Particle Physics Accelerators: MC1.T12: Beam Injection/Extraction and Transport