

A non-destructive beam profile monitor for a muon beam of g-2/EDM experiment at J-PARC

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At J-PARC, g-2/EDM experiment will be prepared to measure the anomalous magnetic moment of muon with high precision by producing the ultra-cold muon. The ultra-cold muon beam will be injected into the solenoidal storage magnet after acceleration to 300 MeV/c.

At the injection, it is required for the muon beam to have axisymmetric distribution for a reduction of a systematic error on the precision. The muon spin orientation could be disturbed by the non-symmetric distribution. Therefore, the beam profile monitoring is crucial to enhance the precision by reducing the systematic error. The non-destructive beam profile monitor has been chosen for the online monitoring to keep the amount of particles where it has to measure the pretty low intensity ($\sim \mu\text{A}$). In this paper a design status of the monitoring system and a reconstruction procedure for transverse profile will be presented.

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