Contribution ID: **218** Type: **oral**

Silicon Tracker for the J-PARC muon g-2/EDM experiment

Tuesday, 23 May 2017 11:18 (18 minutes)

The J-PARC muon g-2/EDM experiment is a planned experiment to measure the anomalous magnetic moment (g-2) and the electric dipole moment (EDM) of muons. In contrast to the experiment at Fermilab, which uses "magic momentum" (˜3.09 GeV/c) of muons to exclude the electric field dependent term on the spin precession frequency, our experiment uses ultra-cold slow muon beam which requires no focusing electric field to be free from the term. Since the beam is slow (˜300 MeV/c), we can store the muons to a relatively small magnetic bottle, equipped with a positron tracker to observe the muon decay very precisely. Since the two experiments have different sources of systematic effects, we can complimentarily probe the g-2 deviation from the Standard Model, which may lead to confirm the effect of new physics.

The positron tracker consists of 48 vanes (96 sides) of detector layers. Each vane consists of 2 times 8 silicon strip sensors, incorporated with flexible printed circuit (FPC) and embedded front-end electronics, their cooling system and support structure. Design of the sensor has been finalized and the mass production is underway. We have also developed a dedicated front-end ASIC, called SliT128A, directly wire-bonded to the circuit. In this talk, the design and the status of the preparation of the tracker system is presented, including the characterization of the sensors, the operation of SliT128A with the sensors wire-bonded and the FPC development. Consideration of the backend electronics, DAQ strategy and reconstruction software are also presented.

Primary author: SUEHARA, Taikan (Kyushu University)

Co-author: FOR, the J-PARC muon g-2/EDM collaboration (J-PARC)

Presenter: SUEHARA, Taikan (Kyushu University)

Session Classification: R4-Semiconductor detectors(2)

Track Classification: Semiconductor detectors