

Search for muon to electron conversion at J-PARC MLF : Recent status on DeeMe

Tuesday 26 August 2014 14:00 (30 minutes)

The charged Lepton Flavor Violation (cLFV) is a clear evidence of the new physics beyond the Standard Model, and $\mu - e$ conversion is considered as one of the most powerful probes to search for cLFV.

DeeMe is a new experiment to search for $\mu - e$ conversion at J-PARC Materials and Life Science Experimental Facility (MLF). This experiment will be carried out at a brand-new beamline (H Line) which will be constructed at J-PARC MLF Muon Science Establishment (MUSE).

The signal electrons from $\mu - e$ conversion occurred in the muonic atoms formed in the muon production target are captured and transported to the magnetic spectrometer by the beamline. The signal electrons can be identified by momentum analysis since they are monochromatic (105 MeV/c). The single event sensitivity achieved by DeeMe experiment is estimated to be 2×10^{-14} with Silicon-Carbide (SiC) muon production target and 1-year data acquisition, while the current upper limit is of the order of 10^{-13} .

DeeMe already has Stage-2 approval from PAC under KEK-IMSS (Institute of Materials Structure Science). The preparation of the experiment is in progress in an effort to start data taking in 2015. The simulation studies, detector R&D and development of SiC target are ongoing.

The current status of DeeMe will be reported.

WG3: Accelerator Physics (Yes/No)

No

WG2: Neutrino Scattering Physics (Yes/No)

No

WG4: Muon Physics (Yes/No)

Yes

WG1: Neutrino Oscillation Physics (Yes/No)

No

Type of presentation

Oral presentation

Author: NAKATSUGAWA, Yohei (KEK)

Presenter: NAKATSUGAWA, Yohei (KEK)

Session Classification: WG4: Muon Physics and High Intensity applications