



Contribution ID: 562

Type: talk

## COMET Experiment - A search for muon-to-electron conversion at J-PARC

*Friday, July 24, 2015 5:20 PM (15 minutes)*

The COMET Experiment at J-PARC aims to search for the lepton-flavour violating (LFV) process of muon to electron conversion in a muonic atom,  $\mu^- N \rightarrow e^- N$ , with a branching-ratio sensitivity of  $6 \times 10^{-17}$ , which is 4 orders of magnitude better than the present upper limit.

Complemental searches for two kinds of muon LFV decay modes,  $\mu^+ \rightarrow e^+ \gamma$  and  $\mu^- N \rightarrow e^- N$ , are quite important in order to explore the parameter region predicted by most well-motivated theoretical models beyond the Standard Model such as SUSY-GUT, seesaw, little-Higgs, etc.

MEG experiment reports the latest result on  $\mu^+ \rightarrow e^+ \gamma$  search at PSI and makes a strong limit on new physics models, i.e. filling in the missing piece of muon LFV,  $\mu^- N \rightarrow e^- N$ , will certainly play an important role.

The need for this sensitivity places several stringent requirements on both the muon beam and the detector system. In order to realise the experiment effectively, a staged approach to deployment is endorsed by the J-PARC Program Advisory Committee and KEK, and the "COMET Phase-I" experiment will commence its engineering runs in 2017. The construction of experimental facility, beam line, magnets and detectors has been already started. The current R & D and construction status and prospects of the experiment are presented in addition to the experimental overview.

**Primary author:** NISHIGUCHI, Hajime (KEK)

**Presenter:** NISHIGUCHI, Hajime (KEK)

**Session Classification:** Flavour Physics and Fundamental Symmetries

**Track Classification:** Flavour Physics and Fundamental Symmetries