

Preliminary study of Phase-II of the COMET Experiment

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Abstract- The observation of charged Lepton Flavor Violation (CLFV) would be a clear indicator of physics beyond the Standard Model (BSM). The COMET experiment will study CLFV for a neutrinoless $\mu \rightarrow e$ conversion with a sensitivity on nuclei improved by four order of magnitude, using the intense pulsed muon beam at J-PARC. The COMET apparatus, Phase I, is under construction, the branching ratio of the $\mu \rightarrow e$ conversion is expected to be 3.1×10^{-15} (90% Confidence Level), the data taking is foreseen to start within the next two years. The second stage of the experiment, Phase II, will increase sensitivity to the $\mu \rightarrow e$ conversion by two order of magnitude within one year of data taking. In this paper the updated study of Protons target and Muons target will be introduced, a further improvement in sensitivity can be foreseen.

Keywords: CLFV, COMET Experiment, BSM