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COMET and PRISM - Search for muon to electron Conversion in Japan

Charged lepton flavor violation (CLFV) has yet to be observed and is known to be sensitive to new physics beyond the Standard Model (SM). The J-PARC E21 experiment is an experiment to search for a CLFV process of neutrinoless muon-to-electron conversion (mu-e conversion) in a muonic atom at a single-event sensitivity of 3x10^{-17} at the Japanese Proton Accelerator Research Complex (J-PARC). This experiment is called COherent Muon to Electron Transition (COMET).

In the long-term future, significant improvements to aim at a single event sensitivity of mu-e conversion of about 2x10^{-19} should be considered. For this ultimate mu-e conversion search, the PRISM (Phase Rotated Intense Slow Muon source) project is being developed in collaboration with the UK and Japan groups.

The physics case made by the staging approach of the COMET experiment and the PRISM experiment is extremely strong. At present, the COMET collaboration includes researchers from the UK and other European countries. We are hoping that the European Strategy for Particle Physics must provide for European contributions to the realization of the COMET and PRISM.

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