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The COMET experiment at J-PARC and lepton flavor violating ALPs

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Charged Lepton Flavor Violating (LVF) processes are among the most sensitive probes of physics Beyond the Standard Model (BSM). One such process is the conversion of a muon to an electron in a muonic atom, which is being investigating with Aluminum atoms by the upcoming COMET experiment at J-PARC, Japan. Carried out in a two-staged approach, COMET ultimately aims to reach a sensitivity on the muon to electron conversion ratio four orders of magnitude above the previous experiments. This presentation introduces the COMET apparatus and outlines the recent progress of the experiment, before discussing COMET's sensitivity to couplings between leptons and LFV Axion-Like Particles (ALPs).

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