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Measuring Lepton Flavour Violation at LHC with Long-Lived Slepton in the Coannihilation Region

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When the mass difference between the lightest slepton, the NLSP, and the lightest neutralino, the LSP, is smaller than the tau mass, the lifetime of the lightest slepton increases in many orders of magnitude with respect to typical lifetimes of other supersymmetric particles. In a general gravity-mediated MSSM, where the LSP is the neutralino, the lifetime of the lightest slepton is inversely proportional to the square of the intergenerational mixing in the slepton mass matrices. Such a long-lived slepton would produce a distinctive signature at LHC and a measurement of its lifetime would be relatively simple. Therefore, the long-lived slepton scenario offers an excellent opportunity to study lepton flavour violation at ATLAS and CMS detectors in the LHC and an improvement of the leptonic mass insertion bounds by more than five orders of magnitude would bepossible. In my talk, I will explain how the slepton lifetime are sensitive to LFV couplings and discuss a possibilities on measuring the lifetime at the LHC experiment. I also show that measurment of the slepton lifetime cand determine branching ratios of LFV tau decays in SUSY Type I Seesaw model.

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