

Interplay of LFV and slepton mass splittings at the LHC as a probe of the SUSY seesaw

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We study the impact of a type-I SUSY seesaw concerning flavour violation (LFV) both at low energies and at the LHC. The study of the dilepton invariant mass distribution at the LHC allows to reconstruct some of the masses of the different sparticles involved in a decay chain (with an expected precision around the percent level). If slepton mass splittings are interpreted as due to the violation of lepton flavour, one expects further low-energy manifestations of LFV, such as radiative and three-body lepton decays. Under the assumption of a type-I seesaw as the source of neutrino masses and mixings, all these LFV observables will be related. Working in the framework of the cMSSM extended by three right-handed neutrino superfields, we conduct a systematic analysis addressing the simultaneous implications of the SUSY seesaw for both high- and low-energy lepton flavour violation. We discuss how the confrontation of slepton mass splittings as observed at the LHC and low-energy LFV observables may provide important information about the underlying mechanism of LFV.

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