

Lepton flavour observables in the MSSM

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In view of the new NA62 measurement of $R_K = \Gamma(K \rightarrow e \nu)/\Gamma(K \rightarrow \mu \nu)$ probing lepton flavour universality with an unprecedented precision, I critically discuss supersymmetric contributions to this observable. The MSSM corrections to R_K are constrained using the anomalous magnetic moment of the electron a_e and the renormalisation of its mass m_e . Neither of these quantities has been studied before to place constraints on the MSSM parameter space. I include the effects of stau mixing and discuss the impact of a future determination of the lightest stau mass on R_K . Further, I present chirally enhanced non-decoupling radiative corrections to light lepton masses. By applying 't Hooft's naturalness criterion I derive new bounds on the trilinear A-terms. Finally I show how the combined information of the muon anomalous magnetic moment and of future collider data on the smuon mass can be used to disentangle the tree-level and radiatively induced contributions to the muon Yukawa coupling.

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