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Planck-scale induced uncertainties in proton lifetime estimates and flavour structure of GUTs

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Grand Unified Theories predict the proton to be unstable and if a particular model is considered, the partial proton decay widths can be calculated. Most often, however, a renormalizable setting is considered and the effective operators possibly describing the physics at the Planck scale are not taken into account. It is well known that one of such effective operators involving the unification gauge field strength tensor may shift the position of the unification scale and, hence, cause a considerable error in the proton lifetime estimates. On the other hand, we are studying the Planck-suppressed operators which contribute to the flavour structure of the theory and have an impact on the determination of the individual partial proton decay widths.

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