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T12A –a minimal model for dark matter and neutrino masses

The model T12A addresses two major questions of modern particle physics: by adding fermionic and bosonic singlets and doublets to the Standard Model particle content, this model allows to radiatively generate neutrino masses, while at the same time it includes viable candidates for the cold dark matter in our Universe.
We present the first extensive study of the parameter space of this model performing the calculation of the particle masses at the one-loop level and including one-loop renormalization group equations.
We impose theoretical constraints such as perturbativity, vacuum stability, and unitarity. Moreover, we evaluate the scale up to which the model can be extrapolated with respect to these requirements.
We than impose experimental constraints such as the observed neutrino mass differences and the Higgs boson mass. A special focus of our study is on lepton-flavour violating decays.
Finally, we impose constraints related to the dark matter relic density as well as direct and indirect detection.
I will present the main results of this parameter space analysis, and discuss possible implications for LHC searches.

Summary

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