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Phenomenology of minimal Z'models: from the LHC to high energy scales

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We consider a class of minimal abelian extensions of the Standard Model (SM) with an extra neutral gauge boson Z'at the TeV scale. In these scenarios an extended scalar sector and heavy right-handed neutrinos are naturally envisaged. We present some of their striking signatures at the Large Hadron Collider, the most interesting
arising from a Z'decaying to heavy neutrino pairs as well as a heavy scalar decaying to two SM Higgs. Using renormalisation group methods, we characterise the high energy behaviours of these extensions and we exploit the constraints imposed by the embedding into a wider GUT scenario.

Summary

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