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3-3-1 model with right neutrinos, implemented in SARAH and SPheno

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In this work, for the first time the implementation of the 3-3-1 model with right-handed neutrinos without exotic electric charges in SARAH package of MATHEMATICA is presented, and it shows how it correctly reproduces the analytical results of the model. As proof of this, we present the mass matrices for the quark sectors, where a Higgs sector with three scalar triplets has been used. Then, using the SPheno program, a numerical analysis of the analytical outputs obtained with SARAH is performed; this with the objective of determining if the model with three triplets generates the mass values of all quarks adequately when comparing them with those accepted in the literature. This implementation is presented in a didactic and accessible way to students who are interested in this field of physics.

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