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Singlet-Doublet Dirac Dark Matter and Neutrino Masses

We examine an extension of the Standard Model that addresses the dark matter puzzle and generates Dirac neutrinos masses through the radiative seesaw mechanism. The new field content includes a scalar field that plays an important role in setting the relic abundance of dark matter. We analyze the phenomenology in the light of direct, indirect, and collider searches of dark matter. In this framework, the dark matter candidate is a Dirac particle that is a mixture of new singlet-doublet fields with mass 1.1 TeV. We find that the allowed parameter space of this model is broader than the well-known Majorana dark matter scenario.

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