

Two-component vector WIMP –fermion FIMP dark matter model with an extended seesaw mechanism

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We consider a $U(1)_D$ extension of the Standard Model that accounts for the neutrino masses and study in detail dark matter phenomenology. The model under consideration includes a vector WIMP and a fermion FIMP dark matter candidates and thus gives rise to two-component dark matter scenarios. We discuss different regimes and mechanisms of production and the interplay between neutrino masses and dark matter relic density. We show that the WIMP and FIMP together compose the observed relic density today with comparable contributions. Finally, we study the connection between the dark matter and the gravitational waves originating from the strong first-order phase transition in the scalar sector.

Author: COSTA, Francesco (University of Göttingen, ITP)

Presenter: COSTA, Francesco (University of Göttingen, ITP)

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