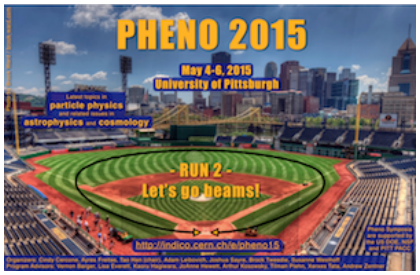

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Neutrino Dark Matter in the Higgs triplet model

Tuesday 5 May 2015 15:45 (15 minutes)

The inability to predict neutrino masses and the existence of the dark matter are two essential shortcomings of the Standard Model. In this work we analyze the effects of introducing vectorlike leptons in the Higgs triplet model to provide a scenario that can explain both neutrino masses and provide a DM candidate. We investigate constraints, including the invisible decay width of the Higgs boson and the electroweak precision variables, and impose restrictions on model parameters. We analyze the effect of the relic density constraint on the mass and Yukawa coupling of dark matter. We also calculate the cross sections for indirect and direct dark matter detection and show our model predictions for the neutrino and muon fluxes from the Sun, and the restrictions they impose on the parameter space. With the addition of vectorlike leptons, the model is completely consistent with dark matter constraints, in addition to improving electroweak precision and doubly charged mass restrictions, which are rendered consistent with present experimental data.

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