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Seesaw determination of the dark matter relic density

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ABSTRACT: We show that in the usual type-I seesaw framework, augmented solely by a neutrino portal interaction, the dark matter relic density can be created through freeze-in, in a manner fully determined by the seesaw interactions and the DM particle mass. This simple freeze-in scenario, where dark matter is not in a seesaw state, proceeds through slow, seesaw-induced decays of Higgs W and Z bosons. We identify two scenarios, one of which predicts the existence of an observable neutrino line.

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