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# (G*) Dark Matter-neutrino interactions through one-loop diagrams

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The nature of Dark Matter is an ongoing and relevant object of study in astroparticle physics. Despite our best efforts to identify its possible particle properties, the results have been null, which has led to a plethora of models describing viable connections to the Standard Model. In particular, loop models of Dark Matter, for example the scotogenic model, have received attention in the last decade but their phenomenology in regard to Dark Matter interactions with neutrinos in the Early Universe has not been widely studied. We aim to explore whether parameters of one-loop models with Majorana and scalar Dark Matter-neutrino interactions such as the Dark Matter mass, the thermally averaged cross-section, and the couplings can be constrained by Early Universe data like the Lyman-$\alpha$ forest, Cosmic Microwave Background (CMB) anisotropies and the Matter Power Spectrum, and give rise to the observed relic abundance.

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