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Triplet Dark Matter from leptogenesis

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A triplet dark matter candidate from the thermal leptogenesis is considered with building a model. The model is based on the standard two Higgs doublet model and seesaw mechanism with Higgs triplets. The parameters (couplings and masses) are adjusted for the observed small neutrino mass and the leptogenesis. Dark matter particles can annihilate and decay in this model. The time evolution of dark matter number is governed by (co)annihilations in the expanding universe, and its mass is constrained by the observed relic density. The dark matter can decay into final states with three leptons (two charged leptons and one neutrino). We investigate whether the decay in galaxy can account for cosmic ray anomalies in the positron and electron spectrum. A noticeable point is that if the dark matter decays into each lepton with different branching ratios, cosmic ray anomalies in AMS-02 measurements of the positron fraction and the Fermi LAT measurements of the electrons-plus-positrons flux could be simultaneously accounted for from its decay products.

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