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Galactic evolution and dark matter stability

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If the dark matter sector in the universe is composed by metastable particles, galaxies and galaxy clusters are expected to undergo significant evolution from high to low redshift. We show that the decay of dark matter, with a lifetime compatible with cosmological constraints, can be at the origin of the observed evolution of the Tully-Fisher relation of disk galaxies and alleviate the problem of the size-evolution of elliptical galaxies.

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