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Neutrino self-interactions and sterile neutrino dark matter

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Sterile neutrinos with masses around a few keV have been postulated to be viable dark matter candidates. This is, however, mostly in tension with various astrophysical observations, the most stringent being the X-ray bounds. In this talk, I would like to present a testable sterile neutrino dark matter production mechanism in the early universe. The idea is to introduce secret self-interactions among the Standard Model neutrinos. Such interactions can enable the sterile neutrinos to be more efficiently produced in the early universe, thus alleviating the tensions. These new interactions are usually stronger than the weak interactions, and hence can serve as a well-motivated target for the upcoming experiments.

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