

Sterile neutrino dark matter with lepton flavor asymmetries

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Large lepton flavor asymmetries with zero total lepton asymmetry could be generated in the Early Universe. They are loosely constrained by current observations, being washed out at MeV temperatures by neutrino oscillations. We show that large lepton flavor asymmetries open up a new parameter space for sterile neutrino dark matter, consistent with the X-ray line searches and structure formation. We reveal this parameter space by solving precise semi-classical kinetic equations with non-averaged neutrino oscillations for sterile neutrinos, whose validity is confirmed by quantum kinetic equations.

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