

BBN constraints on MeV-scale dark sectors: Sterile decays

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We study constraints from Big Bang Nucleosynthesis on inert particles in a dark sector which contribute to the Hubble rate and therefore change the predictions of the primordial nuclear abundances. We pay special attention to the case of MeV-scale particles decaying into dark radiation, which are neither fully relativistic nor non-relativistic during all temperatures relevant to Big Bang Nucleosynthesis. As an application we discuss the implications of our general results for models of self-interacting dark matter with light mediators.

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