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Impact of Low Reheating Temperature and X-ray Bound Relaxation on Sterile Neutrino DM Searches in Terrestrial Experiments

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If we consider sterile neutrino with a $O(\text{keV})$ mass as Warm Dark Matter candidates, produced in the early universe through admixtures with the active neutrinos, via the Dodelson-Widrow or the Shi-Fuller mechanisms, strong constraints on the active-sterile mixing angle are imposed by the observations in the X-ray band and the measurements of the total DM abundance. These constraints, that in a standard scenario would seriously put at risk the possibility of getting a signal of the existence of such sterile neutrinos in laboratory experiments in the near future, can be largely relaxed in low reheating temperature scenarios in which Ω_{DM} is constituted by a cocktail of different candidates, among which there are also sterile neutrinos, or in the case in which the decay rate of sterile neutrinos is reduced by the action of new physics.

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