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Decaying warm dark matter

During the recent years, decaying dark matter models have received renewed interest as proposed solutions to the current cosmological tensions, mainly due to their flexible expansion histories and clustering properties. While much focus has been on decaying cold dark matter, in this talk, I will present our recent work on decaying warm dark matter based on our recent preprint arXiv:2205.13628. Decaying warm dark matter generalises its cold counterpart, and interpolates between a wide range of cosmological models, admitting considerable customisability with few model parameters. Among other things, I will discuss a new, efficient method of computing the perturbations of the decaying sector and present results from a comprehensive MCMC analysis, evaluating the consequence of the model on the Hubble and σ_8 tensions. Lastly, I emphasise the power of agnosticism with respect to the underlying particle physics realisation and discuss applications to majorons and neutrino decays, both of which can be described as decaying warm dark matter.

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