

Late Kinetic Decoupling from Dark Matter - Dark Radiation Scattering

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Summary

There is a growing interest in how the particle nature of dark matter (DM) can affect cosmological and astrophysical observables. Kinetic decoupling of DM from the heat bath in the early universe, e.g., leads to a pronounced cutoff in the matter power spectrum. Traditional WIMP models for DM (like SUSY) typically result in MeV-scale kinetic decoupling, corresponding to a cutoff at unobservably small scales. Here, we provide instead a classification of DM models that result in keV-scale kinetic decoupling. Such models result in a potentially observable cutoff in the power spectrum, at the scale of dwarf-galaxies and hence possibly addressing the missing satellite problem. The main focus of the talk will be on the decoupling process of DM in the early universe, implications for model building, and some examples from our work.

Author: IHLE, Håvard Tveit (University of Oslo)

Co-authors: KERSTEN, Joern (University of Bergen); WALIA, Parampreet (U); BRINGMANN, Torsten (University of Oslo)

Presenter: IHLE, Håvard Tveit (University of Oslo)

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