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A semi-analytical treatment of coupled CDM-massive neutrino perturbations in diverse cosmological backgrounds

Massive neutrinos are well-known to cause a characteristic suppression in the growth of structures at scales below the neutrino free-streaming length. A detailed understanding of this suppression is essential in the era of precision cosmology we are entering into, enabling us to better constrain the total neutrino mass and possibly probe LCDM cosmological model(s) and beyond. In this talk, I will give a semi-analytical treatment to obtain and interpret solutions at the linear scales of the two-fluid system (CDM+ massive neutrino) coupled via gravity treating neutrino mass fraction as a perturbative parameter with redshift dependent-neutrino freestreaming length. I will also discuss the effects of different cosmological backgrounds in the fluid model and their implications on observations.

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