

Early Cannibal Domination and the Matter Power Spectrum

Wednesday 20 January 2021 16:00 (1 hour)

Decoupled hidden sectors in the early universe can easily and generically result in departures from radiation domination prior to Big Bang Nucleosynthesis, leaving a potentially observable footprint in the distribution of dark matter on very small scales. I'll talk about the gravitational consequences of an era of early cannibal domination, which can happen when the lightest particle in a hidden sector has efficient number-changing interactions, giving it an equation of state intermediate between radiation and matter. An early cannibal-dominated era generates a peak in the dark matter power spectrum, the location and height of which are directly determined by the mass of the cannibal field, the strength of the cannibal interactions, and its lifetime. I'll discuss the map between the particle properties of the cannibal species and the features in the linear matter power spectrum, with an eye toward (futuristic) observability.

Zoom link: <https://us02web.zoom.us/j/82696603936>

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