

Hints of dark matter-neutrino interactions in Lyman- α data

Observations of the Lyman- α flux, in overall good agreement with Λ CDM, have long been known to be able to place stringent bounds on models predicting significant small-scale suppressions of the matter power spectrum. Nevertheless, an apparent inconsistency in the determination of the spectrum's tilt at Lyman- α scales has raised the question of whether an overall better fit to the data than Λ CDM can be found. In light of these considerations, in this talk I will discuss the case of one such scenario in which dark matter and (massive) neutrinos can interact. After constraining this model with CMB, BAO and, in particular, Lyman- α data, one finds a significant departure from Λ CDM, with a preference for an interaction strength about 3σ away from zero, whose origin can be traced back to the additional tilt that the interacting scenario can imprint on the Lyman- α flux, thereby solving the aforementioned tension between early-time and Lyman- α probes.

Author: LUCCA, Matteo

Presenter: LUCCA, Matteo