

Contribution ID: 148

Type: not specified

Novel constraints on interacting dark sectors

Wednesday 28 September 2022 16:00 (15 minutes)

A vital step toward understanding DM's nature relies on probing (or constraining) DM self-interaction, and how it interacts with the Standard Model (SM) of particle physics or with other dark sectors. An appealing DM model is to consider the presence of an interacting dark sector, i.e. considering that dark matter is gauged under a symmetry group akin to the SM. In the case those gauge fields are light or massless, we would have then two new components: an interacting dark matter (IDM) coupled with dark radiation (DR). Interacting DM is also appealing in the context of solving the so-called H_0 and σ_8 tensions. In this talk, we provide the most up-to-date constraints in dark-matter dark-radiation interaction. We update former CMB and BAO constraints including also BOSS data within the framework of the effective field theory of large-scale structure. We address how an interacting sector can alleviate cosmological tensions, restoring agreement between Planck and lensing data on the value of S_8 .

Summary

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Track Classification: Cosmology & Astroparticle Physics