

Neutrinos in cosmology

Thursday 15 September 2016 14:00 (20 minutes)

Neutrinos deeply affect cosmological observables, such as the cosmic microwave background and the power spectrum of matter fluctuations. Thanks to these fingerprints cosmology can detect the cosmic neutrino background and constrain the number of neutrino species and the neutrino mass sum with greater precision than current laboratory experiments. However cosmological bounds are model dependent, therefore complementary results from earth based neutrino experiments are essential to provide robust constraints.

In this framework the case of sterile neutrinos represents an open question.

Indeed over the last decade oscillation data have provided hints of the existence of one (or more) sterile neutrinos in the eV mass range, while the latest Planck results rule out additional neutrino species at high significance.

In this talk, after reviewing the up to date cosmological constraints on neutrinos, I will present a pseudoscalar model of secret interactions which provides a simple and elegant way of reconciling eV sterile neutrinos with precision cosmology.

Summary

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