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Testing cosmological structure formation in Unified Dark Matter-Energy models

Saturday, 27 June 2020 11:35 (12 minutes)

Future cosmological data from the Euclid space mission will allow us to test many hypotheses of the nature of Dark Energy. In this talk I present an alternative approach to Λ CDM, a class of models where dark matter and dark energy exist as a single fluid, usually called Unified Dark Matter-Energy models (UDM). I will present the results of testing an UDM model implemented in the Boltzmann code CLASS against weak lensing, CMB, SNe IA and BAO tests.

Due to a unsmooth matter power spectrum caused by a speed of sound bigger than zero, the traditional sampling methods used in MCMC codes known as annealing methods, like Metropolis-Hastings, are not very efficient. In this talk, I will present the results obtained when using the Nested Sampling algorithm, explain the second method and why it is considerably better. At last, I will show the results of model comparison against Λ CDM and enumerate some topics in the line of work for UDM models to be tested with Euclid future data.

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