



Contribution ID: 867

Type: **Talk in the parallel session**

Observational Constraints of Dark D-Brane Cosmology

Monday, 5 July 2021 18:10 (20 minutes)

“Dark energy”, a matter/energy source whose nature is still not well understood, is widely assumed as an explanation for the observed accelerated expansion of the Universe. The standard model of cosmology, the Λ CDM model, consists of the simplest scenarios in which dark energy is a cosmological constant. Even though it provides an impressive fit to the available cosmic background radiation and large-scale distribution of galaxies observational data, this model is still hunted by conceptual problems and observational tensions.

To tackle some of these issues, it is common to take generalisations of the cosmological constant, such as promoting it to a dynamical scalar field, with the possibility of having interaction with the matter sector.

In this talk I will give a brief overview of interacting dark energy models, with particular focus on disformal couplings and its cosmological implications. More concretely, I will focus on the general Dark D-Brane scenario, that predicts a natural interaction in the dark sector related with the induced metric on a moving brane. Furthermore, I will present the main cosmological predictions of this setting, obtained through a numerical study, together with a statistical data analysis to produce observational constraints.

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Session Classification: Dark Energy and the Accelerating Universe

Track Classification: Dark Energy and Large Scale Structure: Dark Energy and the accelerating universe