



Contribution ID: 107

Type: plenary

Varying constants and the cosmological constant problem

Wednesday, 14 September 2016 10:00 (1 hour)

I will discuss how quantum mechanics makes the vacuum energy very sensitive to the values of physical parameters and how this exacerbates the cosmological constant problem in theories with varying 'constants'. Models of "interacting dark energy" in which the masses of dark matter states depend on the dark energy sector provide a striking example of this: in some models the finetuning of the vacuum energy is exacerbated from one part in 10^{50} to one part in $10^{(10^{10})}$. I will discuss how such models are too fine-tuned to be compatible with an anthropic solution to the cosmological constant problem in the presently understood string theory landscape. Such models admit distinctive observational signatures that may be detected by future experiments, hence providing an opportunity to observationally rule out the anthropic landscape solution of the cosmological constant problem in any theory with a finite number of vacua.

Summary

Presenter: MARSH, David (University of Cambridge)

Session Classification: Plenary session III