

Seminarium Zakładu Fizyki Teoretycznej

Departament Badań Podstawowych

Narodowego Centrum Badań Jądrowych

April 7, 2021 (Wednesday), h. 11:15

The seminar is held online:

https://www.gotomeet.me/NCBJmeetings/bp2_seminar

David Wiltshire

(University of Canterbury)

"Modifying the geometry of the Universe"

ABSTRACT: The nature of dark energy is the biggest problem in cosmology. But the answer may not be very different to what most cosmologists assume. General relativity is not a complete theory. It leaves many important questions unanswered, including the nature of gravitational energy. This is directly relevant to an important observational fact: the Universe is a very inhomogeneous cosmic web on the small scales on which general relativity is actually tested.

How one fits one geometry inside another to arrive at an average smooth geometry for the Universe is an open foundational problem. The timescape cosmology is a phenomenological model - without dark energy - which returns to first principles to address such fundamental questions, and to derive observables. It is successful in as far as it can be tested, and it offers falsifiable predictions, which will be tested by future missions such as Euclid. In this talk I will outline the current status of the timescape model, including the most recent observational tests, and how future observations will enable us to nail down key questions in the mystery of what the Universe is made of.