Fyzikální ústav
Akademie věd ČR, v. v. i.

ÚSTAVNÍ SEMINÁŘ

v úterý dne 23. května 2017 ve 14:00

v přednáškovém sále Fyzikálního ústavu AV ČR Na Slovance

Program:

Constantinos Skordis

The CoGraDS project: Cosmology, Gravity and the Dark Sector of the Universe

General Relativity (GR) currently offers our best description of gravity and its validity has been tested by numerous experiments from astrophysical down to sub-millimetre scales. But can we extrapolate this theory further? On theoretical grounds we know that GR is not complete: describing gravity with GR cannot be valid down to arbitrarily small scales and ultra-high energies as a quantum theory of gravity is thought to be necessary there. On observational grounds, assuming that GR correctly describes gravity on large scales, the cosmological model needs in addition the existence of a Dark Sector: Dark Matter (DM) and Dark Energy (DE). The project CoGraDS aims to provide answers to key questions in cosmology: the nature of dark matter and dark energy and the validity of Einstein's theory of General Relativity. This interdisciplinary project brings together cosmology of the late and early universe, gravitational physics of compact objects, string field theory and instrumentation for cosmological surveys.

In this talk I will give a brief overview of the problems we aim to address and how the team aims to tackle them through five research programmes that tie the project together.

Dr. Constantinos Skordis works as a senior researcher at the Institute of Physics CAS since 2016. He works in the field of theoretical cosmology and theories of gravity. He is the principal investigator (PI) of the ERC funded "Theories and Models of the Dark Sector" (TheMoDS) project and the PI of the "Cosmology, Gravity and the Dark Sector of the Universe" (CoGraDS) project funded by the European Regional Development Fund and the State budget of the Czech Republic. He received his Ph.D. from University of California in 2002. Since then he has undertaken a number of postdoctoral and senior researcher positions at different prestigious international universities, including University of Oxford. In the past he worked on quintessence and its effects on the Cosmic Microwave Background, constraints on iso-curvature modes, Monte Carlo Markov Chain methods in cosmology, aspects of Bekenstein's Tensor-Vector-Scalar theory, the Eddington-Born-Infeld theory and its cosmology, the Brans-Dicke theory, and the rotation of CMB polarization spectrum due to massless pseudoscalars. More recently, he has pioneered model-independent methods for testing the theory of gravity on large scales.

Seminář proběhne v anglickém jazyce.

RNDr. Michael Prouza, Ph.D.
ředitel

Fyzikální ústav
Akademie věd ČR, v. v. i.

Colloquium of the Institute of Physics CAS

on Tuesday, May 23rd, 2017 at 2 p.m.

in the lecture hall of the Institute of Physics Na Slovance

Programme:

Constantinos Skordis

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The colloquium will be held in English.

RNDr. Michael Prouza, Ph.D.
Director