UNIVERSITY OF TEXAS AT DALLAS - DEPARTMENT OF PHYSICS

PHYSICS COLLOQUIUM

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in Kusch Auditorium, FN 2.102

Dark Energy Questions and Cosmological Probes

Dr. Mustapha Ishak-Boushaki
Department of Astrophysical Sciences and Department of Physics, Princeton University

The observed cosmic acceleration and the implied existence of dark energy is one of the most important and challenging problems in physics. I will start by reviewing the recent progress in cosmology and the evidence for dark energy. I will then discuss the questions raised by dark energy. Interestingly, cosmological probes are good tools to constrain the dark energy parameters. I will present results on constraining dark energy parameters from currently available data and from simulations of future experiments. These include results from several ongoing and future Cosmic Microwave Background experiments (WMAP, ACT, PLANCK), Supernovae type Ia surveys, and Weak Lensing surveys. Several parameterizations of dark energy are explored. I will discuss in particular how the weak lensing technique called tomography can add key improvements to the constraints. Finally, I will discuss some of the future approaches to probe the nature of dark energy beyond the ongoing work