DISTINGUISHING ΛCDM-MIMICKING *f(R)* MODELS FROM THE ACTUAL ΛCDM MODEL

Seminar

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ABSTRACT

In spite of the reasonable agreement of the ΛCDM model with various data sets, pressing historical issues like the cosmological constant problem and more recent issues like the H0 tension and the *σ8* tension make relevant investigating the following question: can a modified gravity based late-time model exactly mimic a ΛCDM-like cosmological evolution? Indeed, this question is frequently addressed in the context of various modified gravity models, mostly via the reconstruction method. In my talk, I will revisit ΛCDM-mimicking *f(R)*-gravity models. An important question in this context is, even if the ΛCDM model and ΛCDM-mimicking *f(R)* models are cosmographically identical at the background level, can we obtain distinctive signatures at the perturbation level? The usual consensus would be that to answer this question we need to first reconstruct the form of the ΛCDM-mimicking *f(R)*. This has been done previously and the answer, unfortunately, is too complicated (Hypergeometric functions) for any practical purpose. The main point of my talk is that such an explicit reconstruction of ΛCDM-mimicking *f(R)* is not necessary. There is a way around it. Consequently, we have been able to find analytically what kind of distinctive signatures can such models give rise to at the level of density perturbations. The talk is based on 2103.02274 and 2408.03998.

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03:00 PM

PAMU SEMINAR ROOM

Everyone is invited to attend