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Séminaire de Physique des Particules du LPT

Jeudi 12 Octobre 2017, 14 :00
LPT, Salle 114, batiment 210, 1er etage
Domaines : hep-ph

Titre : *Super-Planckian scalars ?*

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Résumé : *Scalar fields with super-Planckian field ranges play an important role in models of large-field inflation and are also employed in cosmological solutions to the electroweak hierarchy problem. One difficulty in constructing such models is that for super-Planckian field values quantum-gravitational effects cannot be ignored. In particular, ultraviolet physics is expected to constrain the field range over which scalars can exhibit a monotonic potential, which in turn has consequences for models of inflation. To study theories of super-Planckian scalars some knowledge of ultraviolet physics is thus necessary. String Theory is a candidate theory of Quantum Gravity and a suitable framework for addressing this question. Another approach is based on the Weak Gravity Conjecture - an as yet unproven theorem regarding consistent theories of Quantum Gravity. In this talk I want to report on recent progress in the study of super-Planckian scalars. In particular, I will explain how the existence of super-Planckian scalars is increasingly called into question by both String Theory and the Weak Gravity Conjecture.*