Schedule:

10h00 Coffee

10h30 Piazza/Leblond Introduction

11h15 Nicholas Tsamis A Gravitational Mechanism for Cosmological Screening

Abstract:
Infrared gravitons are continually produced during inflation. Like all particles, their contribution to the vacuum energy comes not only from their bare kinetic energy but also from the interactions they have with other gravitons. These interactions can be substantial -- despite the particles being highly infrared -- because they occur over the enormous spatial volume of the universe. Furthermore, the interactions grow with time evolution because more and more such gravitons come into causal contact with one another. Since gravity is universally attractive, these interactions can act to slow and eventually stop accelerated expansion.

12h15 Lunch

14h00 Martin Sloth Cosmological Perturbations and IR Issues in quasi de Sitter Universes

Abstract:
Using simple semiclassical relations it is possible to show that the conventional cosmological correlation functions are affected by significant IR corrections in quasi de Sitter space-times when averaged over very large volumes (in the "large box"). The IR effects apparently imply a breakdown of perturbation theory in the large box on sufficiently long time scales, for example the time between self-reproduction and reheating in chaotic inflation. An interpretation of the apparent breakdown of the perturbative expansion of gravity and the relation to the black hole information paradox will also be briefly discussed. Then we will show how one can define "IR-safe" observables seen by a post-inflationary observer today (in the "small box"), leading to a cosmological RG equation connecting "large box" and "small box" observers. Finally, we demonstrate how an observer today might be able to observe the beginning of the end of perturbative de Sitter imprinted in small statistical inhomogeneities/anisotropies at short scales.

15h00 Eugeny Babichev Infrared modification of gravity and some applications

Abstract:
I will discuss modification of gravity in infrared and the Vainshtein mechanism for recovering General Relativity at small scales. A classical example of such a modification is a non-linear massive gravity. A similar scenario can be realized in generalized scalar-tensor models, in which gravity becomes stronger at large distances via the exchange of a scalar that mixes with the graviton, while at small distances the scalar is screened via an analog of the Vainshtein mechanism in massive gravity. I will also discuss some applications of these models for cosmology and black hole physics.

16h00 Coffee break

16h30 Ignatios Antoniadis Dark energy and conformal invariance

17h30 Discussion

18h30 drinks/dinner