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Seminar of the theory group of APC

Mardi 18 Janvier 2022, 14 :00
APC, contact roperpol@apc.in2p3.fr for Zoom meeting details
Domaines : gr-qc

Titre : *Cosmological observables and their combinatorial origin*

Orateur : **Paolo Benincasa (MPI Munich)**

Résumé : *QFT in nearly dS space-times and, more generally, in FRW backgrounds allows us to describe correlations at the end of inflation. However, how to extract fundamental physics out of them is still a challange : we do not even know how fundamental pillars such as causality and unitarity of time evolution constrain them. In this talk I will report on a recent program that aims to construct quantum mechanical observables in cosmology directly from first principles without making any reference to time evolution. Such a formulation, completely independent of any field-theory notion, is indeed possible, with the cosmological observables having a first-principle definition in terms of cosmological polytopes, a novel class of mathematical objects which allow to translate any question on the physics encoded in the cosmological observables in combinatorial terms. I will show how a novel set of constraints on the analytic structure of the cosmological observables emerge from the intrinsic defintion of such objects, as well as the interplay between flat-space and cosmological processes.*