



ID de Contribution: 21

Type: **Oral presentation**

Can we prove the quantum origin of cosmic inhomogeneities ?

vendredi 12 février 2021 14:30 (15 minutes)

One of the most striking predictions of the standard model of cosmology is to trace back the origin of cosmic inhomogeneities that seed the Cosmic Microwave Background anisotropies and the Large-Scale Structures of the universe to quantum fluctuations of the primordial vacuum. Yet, the quantum nature of the inhomogeneities has not been experimentally proven so far. Before thinking of an experiment that would reveal this quantum origin, one needs to know if any quantum signature has survived the travel from the early universe to our detectors. In this talk, I will present one of the obstacles we may face in order to achieve such an experiment. When a quantum device is embedded in a wider environment, quantum decoherence takes place and information is lost in the environmental degrees of freedom. This loss of coherence makes it difficult to maintain quantum signals on macroscopic scales. I will show why this phenomenon is also likely to happen in the early universe and discuss its consequences on the generation of cosmic inhomogeneities.

Field

Cosmology

Day constraints

- I can make a presentation on :
- Monday afternoon from 2pm
 - Tuesday morning before 12:30pm
 - Wednesday all day
 - Thursday morning before 12:30pm
 - Friday all day

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Classification de Session: Talk

Classification de thématique: Astrophysics