Contribution ID: **19** Type: **not specified**

Cosmic Inflation and Quantum Mechanics

Thursday, 25 May 2017 16:25 (40 minutes)

According to cosmic inflation, the inhomogeneities in our universe are of quantum mechanical origin. This scenario was recently spectacularly confirmed by the data obtained by the European Space Agency (ESA) Planck satellite. In fact, cosmic inflation represents the unique situation in Physics where quantum mechanics and general relativity are needed to establish the predictions of the theory and where, at the same time, we have high accuracy data at our disposal to test the resulting framework. So inflation is not only aphenomenologically very appealing theory but it is also an ideal playground to discuss deep questions in a cosmological context. In this talk, I review and discuss those quantum-mechanical aspects of inflation. In particular, I explain why inflationary quantum perturbations represent a system which is very similar to systems found in quantum optics. But I also point out the limitation of this approach and investigate whetherthe large squeezing of the perturbations can allow us to observe a genuine observational signature in the sky of the quantum origin of the cosmological fluctuations.

Presenter: Mr MARTIN, Jerome (CNRS)