Bridging high and low energies in search of quantum gravity - 2025 Cost Action CA23130 First Annual Conference

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Perturbative signatures of a superimposed quantum universe

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In the quest of finding a quantum description of the early universe, we consider a quantised flat FLRW background together with quantum perturbations. We compute quantum trajectories for a universe that can be in a superposition of semiclassical background (and perturbation) states and investigate how the evolution of cosmological perturbations is influenced by the quantum nature of the background. It is of particular interest whether and how such quantum effects can translate into imprints on observable quantities. In addition to probing the quantum nature of our universe, our results thereby pave the way to obtain insights into the physical consequences of ambiguities in the quantum theory.

Working Group

WG1 - High Energy QG Theory

Author: Dr MICKEL, Lisa (IAP)Presenter: Dr MICKEL, Lisa (IAP)Session Classification: WG1 High Energy QG Theory 4