



E I N L A D U N G

der Teilchenphysik und der Gravitationsphysik zum
special seminar

Timothy Cohen

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über

„Large Deviations in the Early Universe“

Abstract:

Fluctuations play a critical role in cosmology. They are relevant across a range of phenomena from the dynamics of inflation to the formation of structure.

In many cases, it is a good approximation to coarse grain these fluctuations (in the sense of a Renormalization Group flow), and they follow a Gaussian distribution as a consequence of the Central Limit Theorem. Yet, some classes of observables are dominated by rare fluctuations and are sensitive to the details of the underlying microphysics.

In this talk, I will introduce the Large Deviation Principle, and will explain how it can be used to diagnose when effective approaches fail and one must instead to appeal to the microscopic description.

I will illustrate this phenomenon in the context of determining the phase transition to eternal inflation, and will briefly mention applications for the distribution of scalar field fluctuations in de Sitter, and the production of primordial black holes.

Zeit: Freitag, **21.04.2023, 16:00 h**

Ort: **Ernst-Mach-Hörsaal**, Boltzmannngasse 5, 2. Stock

Join Zoom Meeting - Meeting ID: 933 4269 3866 Passcode: 185096

<https://univienne.zoom.us/j/93342693866?pwd=aUpTR0VJNUhJY2Q0ajdaKzI1YWVBT09>

gez.: A. Hoang, P. Chrusciel, J. Pradler