SEMPARIS – Séminaires en région parisienne

http ://string.lpthe.jussieu.fr/semparis/

Seminar of the theory group of APC

Mardi 12 Octobre 2021, 14 :00
APC, contact roperpol@apc.in2p3.fr for Zoom meeting details
Domaines : gr-qc

Titre : *Effective field theory approach to thermal bubble nucleation*

Orateur : **Joonas Hirvonen (University of Helsinki)**

Résumé : *The possibility of observing a stochastic gravitational wave background originating from a cosmological first-order phase transition elicits interest in studying the transitions. Currently, a limiting factor in accurately determining the gravitational wave spectrum from an underlying microphysical model is the calculation of the nucleation rate. I will discuss recent work in which we have proposed a new effective field theory (EFT) framework for determining the thermal nucleation rate in high-temperature QFTs. Typical issues encountered in thermal nucleation calculations (double counting fluctuations, stray imaginary parts and diverging derivative expansions) arise due to an inconsistent treatment of nucleating bubbles. Using the EFT framework, we are able to create an effective description for the length scale of the nucleating bubbles and hence treat the nucleating bubbles consistently, resolving the aforementioned issues. In addition, the framework provides a clear physical picture of the process by making a connection to classical nucleation theory by Langer.*