



Universidad del País Vasco
Euskal Herriko Unibertsitatea
The University of the Basque Country

Seminarios de Física Teórica Fisika Teorikoa: Hitzaldiak

Strong first-order phase transitions: Vorticity, droplets and gravitational waves

Daniel Cutting

University of Sussex

Abstract Although in the Standard Model the electroweak phase transition is a crossover, many well-motivated extensions can generate a first-order phase transition at the electroweak scale. For a sufficiently strong phase transition, LISA would be able to observe gravitational waves sourced by plasma motion generated by expanding and colliding bubbles. While numerical simulations have examined weak and intermediate strength phase transitions, we conduct the first 3-dimensional simulations of strong first-order thermal phase transitions in the early Universe. We examine two types of transition, deflagrations and detonations. Detonations in strong transitions behave similarly to their weak and intermediate counterparts. In deflagrations, substantial vorticity is generated, hot droplets form, and the gravitational wave signal is reduced compared to previous models.

Prof. A. Chamorro Seminar Room, Dept. of Theoretical Physics
Wednesday, October 30th, 2019
Time: 11:40 am