



Contribution ID: 19

Type: **not specified**

Seeded phase transitions

Wednesday 24 September 2025 14:00 (18 minutes)

Cosmological phase transitions (PTs) are fascinating events taking place in the first instants of our Universe. First order PTs proceeding via the nucleation and expansion of bubbles are of particular interest as they can impart a strong departure from thermal equilibrium, with important implications for the matter-antimatter asymmetry as well as the copious production of primordial gravitational waves. These phenomenological properties strongly depend on the dynamics controlling bubble nucleation. In a homogenous Universe, critical bubbles formed out of thermal or quantum fluctuations are expected to be spherical in shape, with a nucleation probability that is the same everywhere. This picture, however, can dramatically change if at the time of the PT the Universe contains impurities, or seeds, that can exponentially enhance the nucleation rate in their vicinity. In this talk, I will discuss the general idea behind seeded phase transitions, and provide few natural examples where topological defects, such as strings and domain walls, can play the role of impurities in the early Universe.

Primary author: BLASI, Simone (T (Cosmology))

Presenter: BLASI, Simone (T (Cosmology))

Session Classification: Parallel Sessions Wednesday Cosmo

Track Classification: Cosmology & Astroparticle Physics