

Fluid and Magnetic Spectra in First-Order Phase Transitions

Wednesday, 8 May 2024 11:45 (45 minutes)

First-Order Phase Transitions in the early universe can be an important source for a Stochastic Gravitational Wave Background (SGWB). All particle sectors can contribute to it: the scalar sector through quantum fluctuations and collision of true vacuum bubbles, the fermionic sector, usually considered within a fluid description, through fluid longitudinal perturbations leading, after bubble collision, to sound waves and the gauge sector (magnetic fields) through the coupling with the fluid and the development of (magnetohydrodynamic) turbulence. In the present talk I will focus on the fluid and magnetic contributions to a SGWB showing the important role that two- and four-point correlators of fluid velocity and magnetic fields cover in the analytical determination of the final GW spectrum.

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