

Simulation of the early universe in a Bose-Einstein condensate: recent progress

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According to the standard model of cosmology, the quantum fluctuations of a scalar field during the primordial universe create pairs of particles. The equations leading to the generation of these pairs are highly analogous to those describing the creation of phonons in a Bose-Einstein condensate whose speed of sound is modulated. We are currently studying the temporal dynamics of phonon entanglement in a condensate in order to simulate a specific sequence of events that should have taken place during the primordial universe.