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Cosmologically Consistent Analysis of Gravitational Waves from Hidden Sectors under Synchronous Thermal Evolution

Friday, 31 May 2024 19:00 (5 minutes)

In this talk, we will discuss production of gravitational waves in the early universe within a first order phase transition involving a hidden sector feebly coupled with the visible sector. Unlike most existing studies on GWs from hidden sectors, which assume a constant temperature ratio between the hidden and visible sectors (i.e., ξ=T_h/T=const), we adopt a more precise approach using synchronous thermal evolution, denoted as ξ(T). We will discuss in detail how to obtain this ξ(T) and how it will influence our analysis on GWs from hidden sectors. As a result, we find that the two-field model predicts gravitational waves accessible at several proposed gravitational wave detectors: LISA, DECIGO, BBO, Taiji and their discovery would probe specific regions of the hidden sector parameter space and may also shed light on the nature of bubble nucleation in the early universe.

Paper info

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