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Primordial Gravitational Waves from Phase Transitions during Reheating

We study primordial gravitational waves (GWs) generated from first-order phase transitions (PTs) during cosmic reheating. Using a minimal particle physics model, with a general parametrization of the inflation energy density and the evolution of the Standard Model temperature, we explore the conditions under which PTs occur and determine the corresponding PT parameters. We find that, in certain cosmological scenarios, PTs can be delayed and prolonged compared to the standard post-inflationary evolution. Finally, incorporating these PT parameters, we compute the resulting GW spectrum while accounting for the uncertainties related to cosmic reheating.

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