Ricci Reheating Reloaded

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A Hubble-induced phase transition is a natural spontaneous symmetry breaking mechanism allowing for explosive particle production in non-oscillatory models of inflation involving non-minimally coupled spectator fields. In this work, we perform a comprehensive characterisation of this type of transitions as a tachyonic Ricci-heating mechanism, significantly extending previous results in the literature. By performing $\varphi(100)$ 3+1-dimensional classical lattice simulations, we explore the parameter space of two exemplary scenarios, numerically determining the main timescales in the process. Based on these results, we formulate a set of parametric equations that offer a practical approach for determining the efficiency of the heating process, the temperature at the onset of radiation domination, and the minimum number of e-folds of inflation needed to resolve the flatness and horizon problems in specific quintessential inflation scenarios. These parametric equations eliminate the need for additional lattice simulations, providing a convenient and efficient method for evaluating these key quantities.