

Signatures of inflaton fragmentation during reheating

The exponential expansion of the early Universe driven by inflation leaves it in a cold, empty state. When inflation ends, the energy density of the inflaton field must then be transferred into visible and dark matter and radiation, during the stage known as reheating. In this talk I will review the formalism necessary to determine particle production rates, and the instantaneous temperature during reheating, in the presence of a transient epoch of resonant growth of fluctuations (preheating), sourced by inflaton-inflaton or inflaton-dark matter interactions, which can fragment the classical inflaton condensate. I will discuss the impact that these dynamics can have in the duration of reheating, and in some cosmological observables.

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