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Reevaluating Constant-Roll Dynamics in Warm Inflation

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Testing the limits of the inflationary paradigm can be achieved by moving beyond the standard slow-roll conditions. One approach is to constrain the dynamics of the inflaton field with a constant rate of roll, known as the constant-roll scenario, where the acceleration of the inflaton field satisfies $\ddot{\phi} \propto H\dot{\phi}$. This scenario has been studied extensively in the context of cold inflation . Here , we examine this possibility within a variant of the inflationary scenario called Warm Inflation (WI). We present the necessary conditions for achieving constant-roll in WI models that sustain inflation for at least 60 e-folds, transition gracefully out of the constant-roll phase, and preserve the system near thermal equilibrium, an essential feature of WI in the slow-roll regime.

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