Inflationary Dynamics in a Holographic Dark Energy Model

Moli Ghosh, Surajit Chattopadhyay

Amity University Kolkata

In this work, we investigate the warm inflationary scenario within the framework of the Barrow holographic dark energy (BHDE) model. Unlike conventional cold inflation, warm inflation assumes a continuous interaction between the inflaton and radiation fields throughout the inflationary epoch. This interaction facilitates a constant transfer of energy from the inflation to radiation, maintaining a finite temperature during inflation and eliminating the need for a separate reheating phase. We formulate the warm inflation mechanism by incorporating the Barrow entropy-based holographic dark energy as the driving source of cosmic acceleration. The analysis is carried out in the strong dissipative regime, where the effects of thermal damping are dominant. Our results reveal that BHDE can effectively sustain a successful warm inflationary phase in the early universe. Furthermore, the model parameters are confronted with recent observational data, and a satisfactory agreement is achieved, supporting the viability of the proposed scenario.