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Evolution of global 21 cm temperature in scalar field models

The study investigates the evolution of the global 21 cm temperature, a pivotal cosmological probe for understanding the early Universe, employing a novel approach rooted in scalar field dynamics.In this research, we use scalar field models to understand its impact on 21 cm cosmology, aiming to uncover the unexplored nuances in the temperature fluctuations. Furthermore, we try to understand the scalar field's role in modulating the thermal history of the intergalactic medium and other aspects of cosmology.
This study not only presents a novel perspective on the global 21 cm temperature evolution but also highlights the broader applicability of scalar field dynamics in cosmological investigations. The results offer a valuable foundation for future research endeavors, paving the way for a deeper understanding of the intricate interplay between scalar fields and the cosmic microwave background radiation. Additionally, these insights hold significant implications for refining our comprehension of early Universe cosmology and the nature of dark energy.

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