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An extended holographic Ricci dark energy dominated universe under the purview of truncated Israel-Stewart theory

Thursday 15 December 2022 14:00 (1 hour)

This work demonstrates a viscous extended holographic Ricci dark energy (EHRDE) in a flat FRW universe based on the Israel-Stewart approach. Under the consideration that EHRDE dominates the universe, we study the evolution equation for the bulk viscous pressure Π with the truncated form $\tau\dot{\Pi} + \Pi = -3\xi H$, where τ is the relaxation time, and ξ is the bulk viscosity coefficient. Considering the thermodynamic pressure of EHRDE and bulk viscous pressure, we demonstrate the evolution of the EoS parameter w_{DE} is behaving like a phantom i.e., $w_{DE} \leq -1$. We also observe that $p_{eff} = p + \Pi$ is a monotone decreasing function of time. A decreasing effect of bulk viscosity happens with the evolution of the universe. Lastly, the generalized second law of thermodynamics is valid for the viscous EHRDE-dominated universe enveloped by an apparent horizon.

Session

Astroparticle Physics and Cosmology

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