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Cosmology of Chaplygin gas in viscous framework and Information theoretic model validation

Monday 12 December 2022 14:00 (1 hour)

In this work we have reported a study on the viscous generalized Chaplygin gas (GCG) in the presence of bulk viscosity and interacting scenario. Reconstruction schemes have been manifested in Einstein and modified $f(T)$ gravity framework. Non-viscous cases have also been taken into account. The equation of state (EoS) parameter has been studied under the various circumstances and the stability of the models has been shown through the sign of squared speed of sound. The GCG interacting with pressure-less dark matter has been found to be behaving like quintom in presence of bulk viscosity in Einstien's framework and in f(T) gravity scenario a phantom like behaviour has been reported. The equation of state parameter has been studied for this reconstructed model along with the deceleration parameter and the statefinder pair {r,s}.The statefinder trajectory has been found to interpolate between dust and CDM phase of the universe. Cosmological evolution of primordial perturbations has been studied through scalar metric fluctuations in Einstein's and as well as $f(T)$ gravity framework. Finally,the reconstruction scheme has been examined using statistical analysis, Shannon entropy and Gaussian Mixture Model.In the section of Gaussian Mixture Model (GMM) we have created different clusters by the sets of data that appear close together. Although GMM does unification of early and late time universe.In addition to reconstruction in $f(T)$ gravity framework we have checked the possibility of avoidance of big-rip alongside a statistical exploration of the model.

Session

Astroparticle Physics and Cosmology

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