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Cosmology of a Chaplygin gas model under $f(T)$ gravity and evolution of primordial perturbations

This work investigates the cosmological application of interacting modified Chaplygin gas in the $f(T)$ gravity framework, where T is the torsion scalar. The interacting MCG has been found to have the equation of state (EoS) parameter behaving like quintessence. However, the $f(T)$ gravity reconstructed via the interacting MCG has been found to have EoS crossing the phantom boundary of -1 . Thus, one can generate a quintom-like EoS from an interacting MCG model in the flat universe in the modified gravity cosmology framework. Cosmological evolution of primordial perturbations has also been investigated and the self-interacting potential has been found to increase with cosmic time and the squared speed of sound has been found to be non-negative.

Author: Dr CHATTOPADHYAY, Surajit (Department of Mathematics, Amity University, Kolkata)

Presenter: Dr CHATTOPADHYAY, Surajit (Department of Mathematics, Amity University, Kolkata)