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Consequences of extended holographic Ricci dark energy in chameleon Brans-Dicke cosmology

Accumulating the observational data of Supernovae Type Ia (SN Ia) by the year 1998, Riess et al. (1998) in the High-redshift Supernova Search Team and Perlmutter et al. (1999) in the Supernova Cosmology Project Team have independently reported that the present universe is accelerating. The source for this late-time acceleration was dubbed “dark energy” (DE), which is distinguished from ordinary matter species such as baryons and radiation, in the sense that it has a negative pressure. In the present work, we have studied some features of the generalized Brans-Dicke (BD) model in which the scalar field is allowed to couple nonminimally with the matter sector. Extended holographic Ricci dark energy (EHRDE) has been considered in the above framework of BD cosmology. Some restrictions have been derived for the BD parameter ω , and a stronger matter-chameleon coupling has been observed with the expansion of the universe. In this framework, the equation of the state parameter of EHRDE has behaved like quintom. Also, we have reconstructed the potential and coupling function for BD model for the EHRDE. It has been observed that the potential function is increasing as the matter-chameleon coupling is getting stronger.

Author: CHATTOPADHYAY, Surajit

Presenter: CHATTOPADHYAY, Surajit