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Study of cosmological parameters from LRS-BI metric in f(Q) gravity theory

Some observational deviations from the standard cosmological principles of isotropy and homogeneity lead to create more interest among the researchers on studying anisotropic characteristics of the Universe in recent times. In this context the locally rotationally symmetric Bianchi type I (LRS-BI) metric is appeared to be suitable and simplest candidate for studying anisotropic nature of the Universe. Further, the lack of observational evidence of dark matter and dark energy pushed the researchers to look for alternative gravity theories and f(Q) is one of them. It is an extension of symmetric teleparallel theory equivalent to GR (STEGR), in which non metricity (Q) is the guiding force of gravity. In this study, we use the LRS-BI metric in f(Q) gravity and derived various cosmological parameters like Hubble parameter (H), distance modulus (D_m), effective equation of state (ω_{eff}) etc. for $f(Q) = -\alpha Q^n$ model and tried to constraints various model parameters by using available observational data. Finally we have predicted the possible anisotropy at the early stage of the Universe and it's current effect.

Email

p.sarmah97@gmail.com

Affiliation

Dibrugarh University

Author: SARMAH, Pranjal (Dibrugarh University)

Co-authors: Dr DE, Avik (Universiti Tunku Abdul Rahman, Malayasia); Prof. GOSWAMI, Umananda Dev (Dibrugarh University, India)

Presenter: SARMAH, Pranjal (Dibrugarh University)

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