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The $f(Q,T)$ gravity and affine EoS: observational aspects

In this paper, we investigate the cosmic expansion scenarios within the framework of $f(Q, T)$ gravity by using the affine equation of state (EoS) parameter. Specifically, we consider the linear form of $f(Q, T) = Q + \beta T$, where β is a free model parameter. We use the Bayesian statistical methods, specifically the χ^2 minimization technique to constrain the model parameters using the Cosmic Chronometer (CC) data, Pantheon+SH0ES and DESI BAO data. We further analyse the characteristics of the derived cosmological model. A comprehensive study of the energy density, pressure, equation of state parameter, cosmographic parameters and Energy condition are carried out to understand the universe's evolution in the model and H_0 tension also discuss for this model. The determination of the universe's present age for this model is within 1σ with the planck results.

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