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Cosmic dynamics and observational constraints in $f(Q)$ gravity with affine equation of state

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We study the cosmological implications of barotropic fluid satisfying affine equation of state (EoS) in the General relativity and $f(Q)$ gravity framework. We describe the impact of affine EoS on the cosmic evolution in the model and derive the observational constraints on the model parameters. The models of General relativity and $f(Q)$ gravity may unify the scenario in which the universe transits from the decelerated expansion into the accelerated expansion. The model parameters are constrained by the Bayesian analysis based on χ^2 minimization technique with the observational data of the Cosmic chronometer and Supernovae type Ia. The affine EoS model in the General Relativity possess quintessence kind of dark energy while it possess phantom kind of dark energy in the $f(Q)$ gravity. The present day values of the cosmological parameters along with the current age of the universe are compatible with the observations. We also probe the possibility of setting up the solution of General relativity model into the $f(Q)$ gravity.

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