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Corrected entropy thermodynamics of a phenomenological dark energy model under the purview of f(T) gravity Abstract The present paper reports a study on variable generalized Chaplygin gas (VGCG) interacting with pressureless dark matter (DM) with interaction term Q chosen in the form Q=3H???, where ?? denotes the density of the VGCG. Detailed cosmology of the interacting VGCG has been studied and a quintom behaviour of the equation of state (EoS) parameter has been observed. A statefinder analysis has shown attainment of ?CDM fixed point by the interacting VGCG. Subsequently, a reconstruction scheme for f(T) gravity has been presented based on the interacting VGCG with power-law form of scale factor.

The EoS parameter corresponding to the reconstructed f(T) has shown quintom behaviour. Finally we have studied the generalized second law (GSL) of thermodynamics in reconstructed f(T) cosmology considering the universe as a closed bounded system with future event horizon as the cosmological boundary. We have associated two different entropies with the cosmological horizons with a logarithmic correction term and a power-law correction term. We have studied the validity of the GSL for both of these corrections. Our result deviates from Bamba et al.,

Astrophys. Space Sci. 344, 259 (2013) (2013) in the sense that in the said reference, the GSL had a conditional validity for both of the corrections in the case of future even horizon. However, in the present case the GSL has failed to hold in power-law correction and has unconditional validity in logarithimic correction with future event horizon as the enveloping surface of the universe.

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