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Cosmological models with variable anisotropic hyperbolic parameter in modified gravity

The cosmological models of the universe with an anisotropic variable parameter has been constructed. The field equations for Bianchi type I space-time have been derived in $f(R, T)$ gravity for the functional relationship $f(R, T) = R + 2f(T)$, where R is the Ricci scalar and T is the trace of the energy momentum tensor. Two different models are constructed with respect to the scale factors, such as Power law scale factor and Hybrid scale factor. Moreover, the anisotropic parameter taken here in the form of hyperbolic function that further gives clarity on the behaviour of Equation of State (EOS) parameter. The models can be reduced to isotropic universe when the coefficient constant vanishes. For both the cases the deceleration parameter, state finder diagnostic pairs and energy conditions have been obtained and analyzed which provide physical plausibility of the models.

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