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Anisotropic cosmological models under $f(R;T)$ theory of gravity

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In the present work, we have presented and analyzed the cosmological models of the universe with an anisotropic variable parameter. We have set up the field equations with the space time in the form of Bianchi I metric with an $f(R;T)$ gravity. The functional form for the $f(R;T)$ gravity assumed to be $f(R;T) = R + 2f(T)$, where R and T respectively the Ricci scalar and trace of 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.

Keywords: Modified Gravity; Cosmology; Anisotropy; Equation of State; Deceleration Parameter.

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