

R^2 Correction and Its Implication of Present Cosmic Accelerating Behavior

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Abstract: In this work we show an $R+\alpha R^2$ model of the universe in which certain quadratic correction is considered. Our results indicate that the R^2 term can act as the present impetus of cosmic acceleration, but there may be a future collapsing universe with this component damped. This model can also tolerate a negative cosmological constant Λ , although there seems to be no need for a non-vanishing one. In our simplification, this curvature component has a stationary equation of state, which is similar to radiation. Unlike other dark energy models, this ``missing'' energy has a negative density. Some details and effects on cold dark matter and Λ -relevant model have been discussed in the frame of curvature-squared gravity theories.

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Key words: cosmic acceleration, curvature-squared, dark energy

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