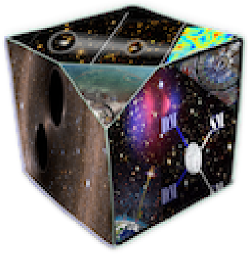
PPC 2018: XII International Conference on Interconnections between Particle Physics and Cosmology



Contribution ID: **21** Type: **Poster on early universe cosmology**

$f(R,T) = f(R) + \lambda T$ gravity models as alternatives to cosmic acceleration

This article presents cosmological models that arise in a subclass of $f(R,T) = f(R) + f(T)$ gravity models, with different $f(R)$ functions and fixed T-dependence. That is, the gravitational lagrangian is considered as $f(R,T) = f(R)+\lambda T$, with constant λ. Here R and T represent the Ricci scalar and trace of the stress-energy tensor, respectively. The modified gravitational field equations are obtained through the metric formalism for the Friedmann-Lema\^itre-Robertson-Walker metric with signature $(+,-,-,-)$. We work with $f(R) = R+\alpha R^2 - \frac{\mu^4}{R}$, $f(R) = R+k\ln(\gamma R)$ and $f(R) = R+me^{[-nR]}$, with $\alpha, \mu, k, \gamma, m$ and n all free parameters, which lead to three different cosmological models for our Universe. For the choice of $\lambda = 0$, this reduces to widely discussed $f(R)$ gravity models. This manuscript clearly describes the effects of adding the trace of the energy-momentum tensor in the $f(R)$ lagrangian. The exact solution of the modified field equations are obtained under the hybrid expansion law. Also we present the Om diagnostic analysis for the discussed models.

Affiliation

Birla Institute of Science and Technology, Pilani

Email address

pksahoo@hyderabad.bits-pilani.ac.in

Academic position

Professor

Primary author: Prof. SAHOO, Pradyumn Kumar (Birla Institute of Technology and Science-Pilani, Hyderabad Campus)

Presenter: Prof. SAHOO, Pradyumn Kumar (Birla Institute of Technology and Science-Pilani, Hyderabad Campus)

Session Classification: Short presentations & Poster session