



Contribution ID: 178

Type: Oral Presentation

Bianchi Type V Model In R^n Gravity: A Dynamical System Approach

Tuesday, 27 July 2021 11:45 (15 minutes)

The accelerated expansion of the universe and the rotational dynamics of galaxies have become part of the mysteries of the physical world and have had theorists working tirelessly for the past years. There is no consensus on what is causing these observable effects: whether it is the unknown dark energy and dark matter or it is the breaking down of our currently accepted theory of gravity, General Relativity, at larger scales. In this work we study the dynamics of a cosmological model described by the Bianchi Type V spacetime in $f(R)$ gravity using the dynamical system analysis. We derive the field equations for a general Bianchi model in the context of $f(R)$ gravity using the tetrad formalism and then specialize in the Type V model. Qualitative description and exact solutions are given for $f(R) = R$ (General Relativity) and for $f(R) = R^n$. We find no accelerating solutions in the case of General Relativity with an exception when dark energy is considered where we find one accelerating solution. In the case of R^n -gravity we find 2 possible accelerating solutions depending on the value of n .

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

Primary author: TSABONE, Thato (North-West University)

Presenter: TSABONE, Thato (North-West University)

Session Classification: Theoretical and Computational Physics

Track Classification: Track G - Theoretical and Computational Physics