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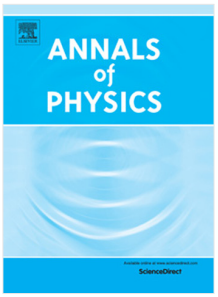

Stability of anisotropic stellar filaments

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Stability of Anisotropic Stellar Filaments

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Abstract

The study of perturbation of self-gravitating celestial cylindrical object have been carried out in this paper. We have designed a framework to construct the collapse equation by formulating the modified field equations with the background of $f(R,T)$ theory as well as dynamical equations from the contracted form of Bianchi identities with anisotropic matter configuration. We have encapsulated the radial perturbations on metric and material variables of the geometry with some known static profile at Newtonian and post-Newtonian regimes. We examined a strong dependence of unstable regions on stiffness parameter which measures the rigidity of the fluid. Also, the static profile and matter variables with $f(R,T)$ dark source terms control the instability of compact cylindrical system.

Keywords: Relativistic systems; Instability; Cylindrical systems.
PACS: 04.40.Cv; 04.40.Dg; 04.50.-h.

1 Introduction

One of the most important and remarkable research outcomes, over the past few decades, is that our cosmos is expanding with an accelerating rate. This roots of this discovery laid from the observations of high red shift supernova Ia [1], which was then reinforced by the cross comparison with the large scale structure [2] and cosmic microwave background radiations [3]. To explore such cosmic puzzle, one requires to introduce a constituent in the cosmic matter distribution equipped with a huge negative pressure gradient in most conventional

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