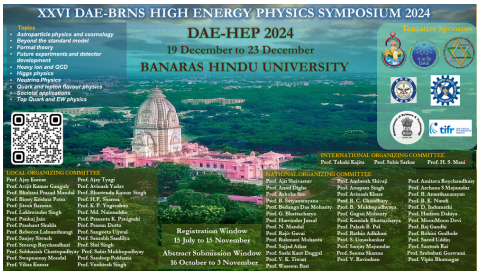

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Gravitational Waves in Horndeski Action as a tool for solving Hubble Tension

Gravitational waves (GWs) have recently emerged as a crucial tool for investigating unresolved cosmological phenomena. A key finding from our study is the discovery of speed variations for GWs predicted by the Horndeski action, which extends our understanding beyond simpler models such as $f(R)$ gravity and Brans-Dicke theory. These variations arise from the Weyl curvature tensor, which introduces distortions in the scalar-tensor field. Thus, we observe that, these distortions also affect the propagation speed of the waves.

By analyzing these speed variations in modified gravity theories—especially those that include the Horndeski action, in the influence of the Weyl curvature tensor we underscore the potential of the Stochastic Gravitational-Wave Background (SGWB) as a valuable cosmological tool. The detection of these SWGB will result in the solving the one of the most important cosmological problem i.e Hubble Tension and σ_8 tension.

Field of contribution

Theory

Author: DASH, UTKAL KESHARI (University of Lucknow, Lucknow, Uttar Pradesh, India)

Co-authors: Ms SRIVASTAVA, Sakshi (University of Lucknow, Lucknow, Uttar Prasdesh); Prof. VERMA, Murli Manohar (University of Lucknow, Lucknow, Uttar Prasdesh)

Presenter: DASH, UTKAL KESHARI (University of Lucknow, Lucknow, Uttar Pradesh, India)

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