



# GRAVITY: CHALLENGES BEYOND GENERAL RELATIVITY

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## Scalar-Induced Gravitational Waves probing cosmological models

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There are a few unanswered questions about standard cosmological model. An open question to answer is if we can use gravitational waves (GWs) to probe beyond General Relativity? Due to their weak interaction with matter, we hope to observe Primordial GWs which can give us a better understanding of the physics of the early Universe. Primordial GWs come in the form of a stochastic background (SGWB) due to the quantum nature of the fluctuations that generate them. One contribution to the latter arise from second-order effects and coupling of scalar fluctuations, known as “scalar-induced”GWs (SIGWs). In this talk, I present my computations of the source term of SIGW both in standard cosmology and beyond General Relativity, specifically considering  $f(R)$  modified gravity model. I will concentrate on the understanding the effect of the first-order correction to the source term and power spectrum w.r.t. General Relativity. I will compare the results of standard cosmology to its modification, to see the order to the effect and how observations of this signature can help in improving our understanding.

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