

PRIMORDIAL GRAVITATIONAL WAVES IN HORNDESKI GRAVITY

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We investigate the propagation of primordial gravitational waves within the context of the Horndeski theories, for this, we present a generalized transfer function quantifying the sub-horizon evolution of gravitational waves modes after they enter the horizon. We compare the theoretical prediction of the modified primordial gravitational waves spectral density with the aLIGO, Einstein telescope, LISA, gLISA and DECIGO sensitivity curves. Assuming reasonable and different values for the free parameters of the theory (in agreement with the event GW170817 and stability conditions of the theory), we note that the gravitational waves amplitude can vary significantly in comparison with general relativity. We find that in some cases the gravitational primordial spectrum can cross the sensitivity curves for DECIGO detector with the maximum frequency sensitivity to the theoretical predictions around 0.05 - 0.30 Hz. From our results, it is clear that the future generations of space based interferometers can bring new perspectives to probing modifications in general relativity.

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