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Higher Order Quantum Gravity Corrections on Inflationary Dynamics

We investigate the higher-order quantum gravity effect on inflationary dynamics within the framework of effective field theory. Our analysis encompasses a broad range of inflationary potentials without specific constraints on their form. We examine the tensor-to-scalar ratio and the running of the spectral indices by considering the generalized inflationary parameters with higher-order quantum gravity corrections. These parameters provide insights into gravitational wave generation and primordial density fluctuations. Our findings have implications for experimental tests of quantum gravity and single-field inflationary models, contributing to a deeper understanding of the early universe. This work offers a comprehensive analysis of higher-order quantum gravity effects on inflation, facilitating future cosmological experiments and shedding light on gravity's fundamental nature.

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