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# Nonclassical Nature of Coherent Squeezed Vacuum State in the Oscillating FRW Universe

The inflationary era is mostly related to the classical gravity in the Friedmann–Robertson–Walker (FRW) universe. In this study, we explore the behavior of a nonclassical scalar field in the context of the Friedmann–Robertson–Walker (FRW) universe. We represented the massive inflaton field in the semi-classical gravity using a coherent squeezed vacuum state. This state provides insight into quantum fluctuations, which play a critical role in the early universe, influencing cosmic inflation, structure formation, and the evolution of the universe. Mandel’s Q parameter is useful for examining the nonclassical nature of the inflaton field. Hence, we investigated Mandel’s Q parameter in the cosmological reference with related cosmological parameters for coherent squeezed vacuum state.

## Field of contribution

Theory

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