

Stochastic Resonance of Instantaneous-State in Linear Regime of Single-Mode Lasers Driven by Colored Noises

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Abstract: According to a linear equation of the laser intensity of single-mode laser with input signal, we compute the generalized signal-to-noise ratio (GSNR) in the instantaneous-state of the single-mode laser, which is driven by two colored noises and correlated in the form of an e-exponential function. We detect that the stochastic resonance (SR) also occurs on instantaneous state at any time. Furthermore we discuss the GSNR trend to stable state in three different forms when taking different signal frequencies.

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Key words: colored noise, Fourier transform, generalized signal-to-noise ratio, instantaneous-state stochastic resonance

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