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Scattering of the squeezed coherent light by a metamaterial slab with negative refractive index and hyperbolic metamaterial

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Abstract

In this paper, by using the quantum input-output relations for an anisotropic slab, we investigate the quadrature squeezing and Mandel parameter of the transmitted squeezed coherent state through a metamaterial slab with negative refractive index and also, a hyperbolic metamaterial slab. It will be shown that the nonclassical properties of the aforementioned state decrease sharply in passing through the negative refractive index slab. Meanwhile the hyperbolic metamaterial slab with a small absorption coefficient can somewhat retain the nonclassical properties of the incident squeezed light.

Keywords: hyperbolic metamaterial, squeezed light, quadrature squeezing, Mandel parameter

For full article, refer to the Persian section