Diffraction of a Gaussian beam on a spiral axicon

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Abstract

The study develops analytical relations that describe the Fresnel and Fraunhofer diffractions of a Gaussian beam on a spiral axicon (SA). The expressions are derived in the form of series of hypergeometric functions. The expression for the SA turns into the expression for a spiral phase plate (SPP) if the axicon parameter is set to zero. The functionality of such optical elements is verified both by numerical simulation and physical experiments using a spatial light modulator.

Keywords: Gaussian Beam, Axicon, spiral axicon, Fraunhofer diffraction, spiral phase plate.

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Access full text (in Russian)

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