Optical pure vortices and hypergeometrical modes

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Abstract:

A countable set of linearly independent solutions of a paraxial wave equation (such as the Schrödinger equation), which are called hypergeometric modes, is obtained. These solutions describe pure optical vortices and can be formed by illumination of a spiral phase plate by a plane wave. These modes differ from the known paraxial modes in that their radius increases as a square root of the distance covered, and that they all propagate with the same phase velocity.

[Access full text (in Russian)](#)

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