Analysis of Optical Fiber Complex Propagation Matrix on the Basis of Vortex Modes

We propose and experimentally demonstrate a novel method for reconstruction of the complex propagation matrix of optical fibers supporting propagation of multiple vortex modes. This method is based on the azimuthal decomposition approach and allows the complex matrix elements to be determined by direct calculations. We apply the proposed method to demonstrate the feasibility of optical compensation for coupling between vortex modes in optical fiber.

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