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Coherence and polarization speckle generated by a rough-surfaced retardation plate depolarizer. - DTU Orbit (08/11/2017)

Coherence and polarization speckle generated by a rough-surfaced retardation plate depolarizer.

The coherence and polarization of polarization speckle, arising from a stochastic electromagnetic field with random change of polarization, modulated by a depolarizer are examined on the basis of the coherence matrix. The depolarizer is a rough-surfaced retardation plate with a random function of position introducing random phase differences between the two orthogonal components of the electric vector. Under the assumption of Gaussian statistics with zero mean, the surface model for the depolarizer of the rough-surfaced retardation plate is obtained. The propagation of the modulated fields through any quadratic optical system is examined within the framework of the complex ABCD matrix theory to show how the degree of coherence and polarization of the beam changes on propagation, including propagation in free space

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