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Optical Encryption and Holographic Multiplexing in a Volume Hologram Based on Random Phase Encoding

Sun, Ching-Cherng; Su, Wei-Chia; Wang, Bor; Arthur E. T. Chiou

Abstract

In this report, we demonstrate and discuss a holographic storage system, where two holographic multiplexing methods are included: one is angular multiplexing and the other one is random phase multiplexing through a ground glass. The latter is responsible to the optical encryption when the stored pattern needs to be encrypted. We study the tolerance to the displacement of the ground glass in three-dimension. We find that it is a function of both the illumination area of the ground glass and the thickness of the volume hologram.