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Improvement of the Shift Tolerance in the Double Random Phase Encoding Encryption System

Wang, Bor; Sun, Ching-Cherng; Su, Wei-Chia

Abstract

Double random phase encoding technique is a valuable and effective method for optical image encryption. However, a precise alignment is required when optical setup is performed. In this paper, we investigate the shift tolerance property of the technique. The theory of the robustness to data loss of the encrypted image is proposed. According to the theory, we propose a simple and novel method to improve the shift tolerance of the decrypting phase mask. Both theory and computer simulation are presented.