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Title:Research on reconstruction algorithms in 2.52 THz off-axis digital holography
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Abstract:To eliminate the diffraction effect on Terahertz (THz) imaging and improve imaging system performance, digital holography has been investigated. The size of the common THz digital hologram and the recording distance are in the same order of magnitude, which does not satisfy the Fresnel approximation conditions. Meanwhile, diffraction has a great impact on free-space propagation behavior. So the research of the influence on reconstruction performance with different reconstruction algorithms is necessary. In this paper, the numerical simulations of the recording and reconstruction process of 2.52 THz off-axis digital holography imaging have been done, and the reconstruction performances of Fresnel angular spectrum algorithm, Rayleigh-Sommerfeld convolution algorithm and angular spectrum algorithm have been compared and analyzed as the reconstruction reference wave is different. The real experimental reconstruction results have also been presented. © Springer Science+Business Media, LLC 2012.
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