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标题: Terahertz Digital Holography
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来源出版物: PHOTONICS AND OPTOELECTRONICS MEETINGS (POEM) 2011: LASER AND TERAHERTZ SCIENCE AND TECHNOLOGY??丛书: Proceedings of SPIE??卷: 8330??文献号: 833003??DOI: 10.1117/12.919528??出版年: 2012??
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 22
摘要: Terahertz wave (THz, also name T-Ray) belongs to far-infrared electromagnetic radiation. Since its unique properties, THz techniques have been paid more and more attentions during the past decades. In this field, THz digital holography is an important research branch, which can accurately extract three-dimensional optical information of objects. Based on features of this technique, it greatly reduces the experimental time and clearly presents the diffraction phenomena of the transmitted THz waves. We elucidated our works about the THz digital holography in recent years. Some key techniques in the THz digital holography are selected as research objects, which are the reflection measurement, quasi-near-field measurement, balanced electro-optic (EO) imaging, and polarization detection. From these four aspects, including the measurement mode, improvement of the spatial resolution, optimization of the signal to noise ratio (SNR), and acquirement of the polarization information, the THz digital holography imaging system has been investigated experimentally and theoretically. These works enhance the performances of the system and promote the practicability of the THz digital holography. Although there are a lot of theoretical and technical difficulties to be overcome in the practical applications, it is firmly believed that the THz digital holography will present strong abilities in factory and research fields in the future.
入藏号: WOS:000304667100002
语种: English
文献类型: Proceedings Paper
会议名称: 4th International Photonics and Optoelectronics Meetings (POEM) - Laser and Terahertz Science and Technology/10th International Conference on Photonics and Imaging in Biology and Medicine (PIBM)
会议日期: NOV 02-05, 2011
会议地点: Wuhan, PEOPLES R CHINA
会议赞助商 : Wuhan Natl Lab Optoelect, Huazhong Univ Sci & Technol, China Hubei Prov Sci & Technol Dept, Wuhan E Lake Natl Innovat Model Zone (Opt Valley China, OVC), Opt Soc, Hubei Prov Foreign Experts Affairs Bur, Natl Nat Sci Fdn Comm (NNSFC)
作者关键词: Terahertz digital holography; reflective tomography; quasi-near-field; balanced electro-optic (EO) imaging; polarization detection
KeyWords Plus: ELECTROOPTIC DETECTION; PULSES; ARRAYS
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出版商: SPIE-INT SOC OPTICAL ENGINEERING
出版商地址: 1000 20TH ST, PO BOX 10, BELLINGHAM, WA 98227-0010 USA
Web of Science 分类: Optics
学科类别: Optics
IDS 号: BAM23
ISSN: 0277-786X
ISBN: 978-0-8194-8987-6
29 字符的来源出版物名称缩写: PROC SPIE
来源出版物页码计数: 12