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Title:Terahertz radiation for tomographic inspection

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Abstract:Three-dimensional (3-D) terahertz computed tomography has already been performed with three different reconstruction methods (standard back-projection algorithm and two iterative analyses) to reconstruct 3-D objects. A Gaussian beam model is developed according to the physical properties of terahertz waves such as the energy distribution within the propagation path. This model is included as a new convolution filter into the tomographic reconstruction methods in order to analyze the impact of a such effect and then to enhance quality and accuracy of the resulting images. We demonstrate the improvements of the optimized reconstructions for applied 3-D terahertz tomography. © 2012 Society of Photo- Optical Instrumentation Engineers (SPIE).