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Title:Fast terahertz reflection tomography using block-based compressed sensing

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Abstract:In this paper, a new fast terahertz reflection tomography is proposed using block-based compressed sensing. Since measuring the time-domain signal on two-dimensional grid requires excessive time, reducing measurement time is highly demanding in terahertz tomography. The proposed technique directly reduces the number of sampling points in the spatial domain without modulation or transformation of the signal. Compressed sensing in spatial domain suggests a block-based reconstruction, which substantially reduces computational time without degrading the image quality. An overlap-average method is proposed to remove the block artifact in the block-based compressed sensing. Fast terahertz reflection tomography using the block-based compressed sensing is demonstrated with an integrated circuit and parched anchovy as examples.

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