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Title:Terahertz heterodyne imaging with InGaAs-based bow-tie diodes
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Abstract:Room-temperature detection and imaging in transmission and reflection geometries at 0.591 THz with planar asymmetrically shaped InGaAs diodes (also called bow-tie diodes) are demonstrated in direct and heterodyne mode. The sensitivity of the diodes is found to be 6 V/W in direct mode, and the noise-equivalent power (NEP) in direct and heterodyne mode is estimated to be about 4 nW/ √Hz and 230 fW/Hz for a local-oscillator power of 11 uW, respectively. The improvement of the dynamic range by heterodyning over direct power detection amounts to about 20 dB using pixel read-out times relevant to real-time imaging conditions.
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