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Title:Theoretical research on terahertz air-breakdown coherent detection with the transient photocurrent model
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Abstract:The physical mechanism for sensing broadband terahertz (THz) wave via using femtosecond (fs) laser induced gas plasma without any local accessory near the plasmai.e. THz air breakdown coherent detectionis systemically investigated by utilizing the transient photocurrent model. Previous observed resultssuch as conversion from incoherent to coherent detectioncan be numerically obtained. Further calculations and analysis show that it is through modification of the gas ionization processand not acceleration of freed electrons or through a four-wave-mixing (FWM) processthat the THz waveforms can be encoded into the detected second harmonic (SH) signals. © 2012 Optical Society of America.
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