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Title:Single-shot diagnostic for the three-dimensional field distribution of a terahertz pulse based on pulsed digital holography

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Abstract:In this Letter, a pulsed digital holographic approach for detecting the three-dimensional (3D) field distribution of a freely propagating single terahertz (THz) pulse based on an electro-optic (E-O) sampling technique is proposed, by which the 3D field distribution of a single THz pulse sampled at different time points can be recorded in real-time on a series of subholograms and will be finally reconstructed as a series of two-dimensional spatial electric field distributions in a time series with a time resolution of femtosecond order. Simulation is carried out to demonstrate the process of the implementation, which confirmed the feasibility of the proposal.

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