Terahertz Wave Air Photonics: Generation and Detection of Intense THz Waves with Laser-induced Plasma in Gaseous Media

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Terahertz (THz) wave generation and detection using ambient air or selected gases (i.e., laser-induced gas plasma) as the THz wave emitter and sensor, which is termed as THz Wave Air Photonics, has attracted much scientific attention. Such an all-air-based THz spectroscopic system provides very high THz wave intensity and ultra-broad bandwidth covering the entire THz gap and well beyond. Potential applications include nonlinear spectroscopy and imaging, as well as remote sensing and identification of hazardous materials. I will present coherent control of THz wave generation through the manipulation of electron trajectories inside the laser-induced plasma will also be presented.