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Title:Terahertz radiation shaping based on third-order dispersion and self-phase modulation in standard single-mode optical fiber
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Abstract:Third-order dispersion and self-phase modulation in standard single-mode fibers are employed in a fiber-based THz time domain spectroscopy system for radiation shaping. Ultra-short optical pulses are converted into trains of pulses, thus shaping the THz radiation emitted by photoconductive antennas operating at telecom wavelengths. The proposed architecture allows narrowband and wideband THz emission as well as tunability of the central frequency. Since the shaping takes place in standard optical fiber the architecture could be potentially implemented without requiring any additional device. Experiments showing the principle of operation have been performed demonstrating tunability of the central frequency between 350 and 800 GHz and bandwidth from 150 GHz to the full bandwidth of the system. © Springer Science+Business Media, LLC 2012.
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Uncontrolled terms:Central frequency - Narrow bands - Photoconductive antennas - Photoconductive materials - Proposed architectures - Single-mode optical fiber - Standard single mode fibers - Telecom wavelengths - Terahertz radiation - Third order dispersion - THz emission - THz radiation - THz time domain spectroscopy - Tunabilities - Wide-band
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