**Multi-range characterization of microwave-to-terahertz supercontinuum driven by high-power ultrashort laser pulses in the mid-infrared**

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Driven by high-power laser radiation in the mid-infrared range, plasma currents become a source of secondary ultrabroadband radiation in the terahertz (THz) and microwave ranges [1–3]. For its correct and complete spatial, spectral, and polarization characterization, it is necessary to use a whole complex of various complementary measurement techniques of ultrafast optics, THz photonics and microwave electronics. For the purpose of a comprehensive analysis of the generated microwave-THz supercontinuum, in the presented work, a combination of methods of electro-optical sampling and autocorrelation analysis is used together with radio-electronic measurements using coaxial-wave adapters and broadband horn antennas. Such a set of detection techniques provides an accurate description of the spatial, spectral, and polarization properties of the generated microwave-THZ supercontinuum in the range from 0.1 GHz to 17 THz, which has a wide-angle pattern and exhibits features of the secondary radiation of longitudinal and transverse laser induced plasma currents.

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