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Title

Generation of Terahertz Radiation by Large-aperture Photoconductive Antennas in Condition of a High Level Excitation

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Abstract

Theoretical and experimental results about generation coherent terahertz (THz) radiation in photoconductive medium in condition of a high level excitation are presented. Employing self-consistent analytical approach to the set of non-equilibrium Boltzmann equation for charge carriers and Maxwell equations for electromagnetic radiation we have studied the radiation phenomena in non-equilibrium e-h plasma excited in the photoconductive gap of terahertz radiating large-aperture photoconductive antenna by an ultrashort laser pulse. Equally with the effect of the radiation screening, the effect of the non-linear absorption of an optical pump pulse (bleaching of photoconductive medium) was taken into account. It was shown that the effect of nonlinear absorption reconstructs the dynamics of the generation of terahertz radiation and must take into account the effects associated with the spread of the generated wave and the wave of excitation. (7 References).