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Accession number:20125115806228
Title:A self-consistent regime of generation of terahertz radiation by an optical pulse with a tilted intensity front
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Source title:Quantum Electronics
Abbreviated source title:Quantum Electron.
Volume:42
Issue:11
Issue date:2012
Publication year:2012
Pages:1027-1033
Language:English
ISSN:10637818
E-ISSN:14684799
Document type:Journal article (JA)
Publisher:Turpion Ltd., Blackhorse Road, Letchworth, Hertfordshire, SG6 IHN, United Kingdom
Abstract:We derived a self-consistent system of nonlinear wave equations describing the terahertz generation in dielectric uniaxial crystals by optical pulsed radiation with a tilted wavefront. The numerical analysis of the system of equations showed that the generation of a broadband one-period terahertz signal is accompanied by a red shift of the carrier frequency of the optical pulse, the magnitude of the shift being proportional to the pulse intensity. The generation efficiency with respect to energy reached a maximum at a certain distance of propagation in the crystal, after which the efficiency decreased. A satisfactory agreement was obtained between theoretical calculations and experimental data of other investigations. © 2012 Kvantovaya Elektronika and Turpion Ltd.
Number of references:33
Main heading:Terahertz waves
Controlled terms:Electromagnetic wave emission - Numerical analysis - Wavefronts
Uncontrolled terms:Carrier frequency - Nonlinear wave equation - Optical rectifications - Pulse intensity - Pulsed radiation - Red shift - System of equations - Terahertz generation - Terahertz radiation - Terahertz signals - Theoretical calculations - Uniaxial crystal
Classification code:711 Electromagnetic Waves - 921.6 Numerical Methods
DOI:10.1070/QE2012v042n11ABEH014876
Database:Compendex