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Accession number:20125115809011

Title: Microwave frequency comb attributed to the formation of dipoles at the surface of a semiconductor by a mode-locked ultrafast laser

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Source title: Applied Physics Letters

Abbreviated source title: Appl Phys Lett

Volume: 101

Issue: 23

Issue date: December 3, 2012

Publication year: 2012

Article number: 231102

Language: English

ISSN: 00036951

CODEN: APPLAB

Document type: Journal article (JA)

Publisher: American Institute of Physics, 2 Huntington Quadrangle, Suite N101, Melville, NY 11747-4502, United States

Abstract: The generation of terahertz radiation by focusing a mode-locked ultrafast laser on the surface of a semiconductor was demonstrated by Zhang in 1990, and others have made numerous measurements and analyses of this effect. We have measured the surge current which causes this radiation, showing that this current, and presumably the radiation, are frequency combs with harmonics at integer multiples of the pulse repetition rate of the laser. The harmonics in the current are enhanced by placing the semiconductor in a tunneling junction, where the fundamental is increased by 8 dB with a DC tunneling current of 100 pA. &copy; 2012 American Institute of Physics.

Number of references: 7

Main heading: Saturable absorbers

Controlled terms: Semiconductor junctions - Ultrafast lasers

Uncontrolled terms: Frequency combs - Mode-locked - Surge current - Terahertz radiation - Tunneling current - Tunneling junctions

Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 744.1 Lasers, General

DOI: 10.1063/1.4768952

Database: Compendex

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