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Accession number:20122915262244

Title:Phase-shifted Fresnel zone lenses for photomixing generation of coherent THz wave Authors:Vijayakumar, Anand (1); Uemukai, Masahiro (2); Suhara, Toshiaki (2) Author affiliation:(1) Department of Electrical, Electronic and Information Engineering, Graduate

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Source title: Japanese Journal of Applied Physics

Abbreviated source title:Jpn. J. Appl. Phys.

Volume:51

Issue:7 PART 1

Issue date:July 2012

Publication year:2012

Article number:070206

Language:English

ISSN:00214922

E-ISSN:13474065

Document type:Journal article (JA)

Publisher:Japan Society of Applied Physics, 1-12-3 Kudan-Kita,k Chiyoda-ku, Tokyo, 102, Japan Abstract:Novel optics configurations simplified by using phase-shifted Fresnel zone lenses (FZLs) are proposed for THz wave generation by mixing optical beams from integrated twin lasers on GaAs photomixers. The phase-shifted FZL superimposes and collinearly collimates the beams from the closely-aligned twin lasers, or superimposes and focuses them directly onto a photomixer, with a high efficiency. Phase-shifted binary and analog FZLs were designed and fabricated by electron beam writing. Good performances close to the theoretical prediction were obtained, and THz wave generation was successfully demonstrated.© 2012 The JPN Society of Applied Physics.

Number of references:13

Main heading: Terahertz waves

Controlled terms:Electron beams - Phase shift

Uncontrolled terms:Electron beam writing - Fresnel zones - GaAs - Optical beams - Phase shifted - Photomixers - Photomixing - Theoretical prediction - THz waves - Twin laser

Classification code:711 Electromagnetic Waves - 932 High Energy Physics; Nuclear Physics; Plasma Physics - 942.2 Electric Variables Measurements

DOI:10.1143/JJAP.51.070206

Database:Compendex

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