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标题: Generation of coherent charge oscillations in the plane of GaAs quantum wells
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来源出版物: ULTRAFAST PHENOMENA AND NANOPHOTONICS XVI??丛书: Proceedings of SPIE??卷: 8260??文献号: 82600T??DOI: 10.1117/12.905348??出版年: 2012??
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 43
摘要: We report on the observation of ultrafast in-plane charge oscillations resulting from simultaneous optical excitation of heavy-and light-hole excitons in (110)-oriented GaAs quantum wells. These charge oscillations arise from a displacement between heavy and light-hole states in the plane of the quantum well, and, thus, differ significantly from previously observed charge oscillations directed along the growth direction of a quantum well. Our observations are evidence for the existence of a strong far-infrared inter-subband transition dipole moment between heavy- and light-hole subbands for in-plane wave vectors which we estimate to be similar to 0.5 e angstrom for the quantum wells under investigation. We attribute this in-plane transition dipole moment to strong band mixing in the (110)-oriented structures.
入藏号: WOS:000302550300019
语种: English
文献类型: Proceedings Paper
会议名称: Conference on Ultrafast Phenomena and Nanophotonics XVI
会议日期: JAN 22-25, 2012
会议地点: San Francisco, CA
会议赞助商 : SPIE, Femtolasers, Inc
作者关键词: Charge oscillations; photocurrent; THz generation
KeyWords Plus: SEMICONDUCTOR NANOSTRUCTURES; INTERFERENCE CONTROL; ELECTRICAL CURRENTS; TERAHERTZ EMISSION; PHOTON-ECHOES; SPECTROSCOPY; SPINTRONICS; EXCITATION; EXCITONS; PULSES
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出版商: SPIE-INT SOC OPTICAL ENGINEERING
出版商地址: 1000 20TH ST, PO BOX 10, BELLINGHAM, WA 98227-0010 USA
Web of Science 分类: Optics
学科类别: Optics
IDS 号: BZR31
ISSN: 0277-786X
ISBN: 978-0-8194-8903-6
29 字符的来源出版物名称缩写: PROC SPIE
来源出版物页码计数: 11