605.
标题: Nonlinear dynamics in wurtzite InN diodes under terahertz radiation
作者: Wei, F (Wei, Feng)
来源出版物: CHINESE PHYSICS B 卷: 21 期: 3 文献号: 037306 DOI: 10.1088/1674-1056/21/3/037306 出版年: MAR 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: 32
摘要: We carry out a theoretical study of nonlinear dynamics in terahertz-driven n(+)nn(+) wurtzite InN diodes by using time-dependent drift diffusion equations. A cooperative nonlinear oscillatory mode appears due to the negative differential mobility effect, which is the unique feature of wurtzite InN aroused by its strong nonparabolicity of the Gamma(1) valley. The appearance of different nonlinear oscillatory modes, including periodic and chaotic states, is attributed to the competition between the self-sustained oscillation and the external driving oscillation. The transitions between the periodic and chaotic states are carefully investigated using chaos-detecting methods, such as the bifurcation diagram, the Fourier spectrum and the first return map. The resulting bifurcation diagram displays an interesting and complex transition picture with the driving amplitude as the control parameter.
入藏号: WOS:000301341400071
语种: English
文献类型: Article
作者关键词: nonlinear dynamics; terahertz radiation; wurtzite InN
KeyWords Plus: MOLECULAR-BEAM EPITAXY; ELECTRON-TRANSPORT; INDIUM NITRIDE; BAND-GAP; GROWTH; ALLOYS
地址: Jiangsu Univ, Dept Phys, Zhenjiang 212013, Peoples R China
通讯作者地址: Wei, F (通讯作者),Jiangsu Univ, Dept Phys, Zhenjiang 212013, Peoples R China
电子邮件地址: xfhe@ujs.edu.cn
出版商: IOP PUBLISHING LTD
出版商地址: TEMPLE CIRCUS, TEMPLE WAY, BRISTOL BS1 6BE, ENGLAND
Web of Science 分类: Physics, Multidisciplinary
学科类别: Physics
IDS 号: 906JM
ISSN: 1674-1056
29 字符的来源出版物名称缩写: CHINESE PHYS B
ISO 来源出版物缩写: Chin. Phys. B
来源出版物页码计数: 5