321.
标题: Thermalization of photoexcited carriers in bismuth investigated by time-resolved terahertz spectroscopy and ab initio calculations
作者: Timrov, I (Timrov, I.); Kampfrath, T (Kampfrath, T.); Faure, J (Faure, J.); Vast, N (Vast, N.); Ast, CR (Ast, C. R.); Frischkorn, C (Frischkorn, C.); Wolf, M (Wolf, M.); Gava, P (Gava, P.); Perfetti, L (Perfetti, L.)
来源出版物: PHYSICAL REVIEW B 卷: 85 期: 15 文献号: 155139 DOI: 10.1103/PhysRevB.85.155139 出版年: APR 26 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: 54
摘要: The charge carrier dynamics of photoexcited bismuth generates a Drude response that evolves over time. Our data show that the plasma frequency of bismuth displays an initial increase and a subsequent decay. We have performed ab initio calculations on bulk bismuth within the density functional theory and show that this peculiar behavior is due to local extrema in the valence and conduction bands. It follows that most of the carriers first accumulate in these extrema and reach the Fermi level only 0.6 ps after the photoexcitation.
入藏号: WOS:000303235900002
语种: English
文献类型: Article
KeyWords Plus: ELECTRONIC-STRUCTURE; BAND-STRUCTURE; PSEUDOPOTENTIAL APPROACH; FERMI-SURFACE; BI; SEMIMETALS; MULTIPLICATION; CRYSTALS; MODEL; GAAS
地址: [Timrov, I.; Faure, J.; Vast, N.; Gava, P.; Perfetti, L.] Ecole Polytech, Solides Irradies Lab, CEA DSM, CNRS UMR 7642, F-91128 Palaiseau, France
[Kampfrath, T.; Frischkorn, C.; Wolf, M.; Perfetti, L.] Free Univ Berlin, Fachbereich Phys, D-14195 Berlin, Germany
[Kampfrath, T.; Frischkorn, C.; Wolf, M.] Max Planck Gesell, Fritz Haber Inst, D-14195 Berlin, Germany
[Ast, C. R.] Max Planck Inst Festkorperforsch, DE-70569 Stuttgart, Germany
通讯作者地址: Timrov, I (通讯作者),Ecole Polytech, Solides Irradies Lab, CEA DSM, CNRS UMR 7642, F-91128 Palaiseau, France
出版商: AMER PHYSICAL SOC
出版商地址: ONE PHYSICS ELLIPSE, COLLEGE PK, MD 20740-3844 USA
Web of Science 分类: Physics, Condensed Matter
学科类别: Physics
IDS 号: 931RB
ISSN: 1098-0121
29 字符的来源出版物名称缩写: PHYS REV B
ISO 来源出版物缩写: Phys. Rev. B
来源出版物页码计数: 8