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Accession number:20123015268693
Title:Acoustic and breathing phonon modes in bilayer graphene with Moiré patterns
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Source title:Applied Physics Letters
Abbreviated source title:Appl Phys Lett
Volume:101
Issue:2
Issue date:July 9, 2012
Publication year:2012
Article number:023113
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 lattice dynamics properties are investigated for twisting bilayer graphene. There are big jumps for the inter-layer potential at twisting angle θ 0 ° and 60°, implying the stability of Bernal-stacking and the instability of AA-stacking structures, while a long platform in [8,55]° indicates the ease of twisting bilayer graphene in this wide angle range. Significant frequency shifts are observed for the z breathing mode around θ 0 ° and 60°, while the frequency is a constant in a wide range [8,55]°. Using the z breathing mode, a mechanical nanoresonator is proposed to operate on a robust resonant frequency in terahertz range. © 2012 American Institute of Physics.
Number of references:26
Main heading:Graphene
Controlled terms:Crystal lattices - Natural frequencies - Solids
Uncontrolled terms:Bi-layer - Breathing modes - Frequency shift - Phonon mode - Terahertz range - Twisting angle - Wide angle
Classification code:711.1 Electromagnetic Waves in Different Media - 761 Nanotechnology - 804 Chemical Products Generally - 933 Solid State Physics - 933.1.1 Crystal Lattice
DOI:10.1063/1.4735246
Database:Compendex