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Accession number:20125115809095
Title:Toward terahertz heterodyne detection with superconducting Josephson junctions
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Source title:Applied Physics Letters
Abbreviated source title:Appl Phys Lett
Volume:101
Issue:23
Issue date:December 3, 2012
Publication year:2012
Article number:233505
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:We report on the high-frequency mixing properties of ion irradiated YBa <inf>2</inf> Cu<inf>3</inf> O<inf>7</inf> Josephson junctions. The frequency range, spanning above and below the characteristic frequencies f<inf>c</inf> of the junctions, permits a clear observation of the transition between two mixing regimes. The experimental conversion gain was found to be in good agreement with the prediction of the three-port model. Finally, we discuss the potential of the junctions to build a Josephson mixer operating in the terahertz frequency range. © 2012 American Institute of Physics.
Number of references:25
Main heading:Josephson junction devices
Controlled terms:Mixing
Uncontrolled terms:Characteristic frequencies - Experimental conversion - Frequency ranges - Heterodyne detection - High frequency HF - Josephson - Josephson junctions - Mixing property - Tera Hertz - Terahertz frequency range
Classification code:715.1 Electronic Equipment, non-communication - 802.3 Chemical Operations
DOI:10.1063/1.4769441
Database:Compendex