273
Accession number:20123015271867
Title:Input bandwidth of hot electron bolometer with spiral antenna
Authors:Shurakov, Alexander (1); Seliverstov, Sergey (1); Kaurova, Natalia (1); Finkel, Matvey (1); Voronov, Boris (1); Goltsman, Gregory (1)
Author affiliation:(1) Moscow State Pedagogical University, Moscow, Russia; (2) Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138, United States
Corresponding author:Shurakov, A.
Source title:IEEE Transactions on Terahertz Science and Technology
Abbreviated source title:IEEE Trans. Terahertz Sci. Technolog.
Volume:2
Issue:4
Issue date:2012
Publication year:2012
Pages:400-405
Article number:6226432
Language:English
ISSN:2156342X
Document type:Journal article (JA)
Publisher:IEEE Microwave Theory and Techniques Society, 2458 East Kael Circle, Mesa, AZ 85213, United States
Abstract:We report the results of our study of the input bandwidth of hot electron bolometers (HEB) embedded into the planar log-spiral antenna. The sensitive element is made of the ultrathin superconducting NbN film patterned as a bridge at the feed of the antenna. The contacts between the antenna and a sensitive element are made from in situ deposited gold (i.e., deposited over NbN film without breaking vacuum), which gives high quality contacts and makes the response of the HEB at higher frequencies less affected by the RF loss. An accurate experimental spectroscopic procedure is demonstrated that leads to the confirmation of the wide (∼8 THz) bandwidth in this antenna coupled device. © 2012 IEEE.
Number of references:14
Main heading:Bandwidth
Controlled terms:Bolometers - Gold deposits - Spiral antennas - Superconducting films
Uncontrolled terms:Antenna-coupled - High quality - Higher frequencies - Hot electron bolometer - In-situ - Sensitive elements - Terahertz - Ultra wide-band antennas - Ultra-thin
Classification code:547.1 Precious Metals - 708.3 Superconducting Materials - 716 Telecommunication; Radar, Radio and Television - 716.1 Information Theory and Signal Processing - 944.7 Radiation Measuring Instruments
DOI:10.1109/TTHZ.2012.2194852
Database:Compendex