Abstracts

Microwave Detectors Based on Granular High-Tc Thin Films (Feb. 1990 [T-MTT])

J. Konopka, R. Sobolewski, G. Jung, W. Kula, P. Gierlowski, A. Konopka and S.J. Lewandowski. "Microwave Detectors Based on Granular High-Tc Thin Films (Feb. 1990 [T-MTT])." 1990 Transactions on Microwave Theory and Techniques 38.2 (Feb. 1990 [T-MTT]): 160-165.

Detecting and mixing properties of microstrip superconducting Y-Ba-Cu-O and Bi-Ca-Sr-Cu-O thin-film structures deposited on various substrates have been investigated. The device performance was tested in 25, 55, and 110 GHz frequency bands at temperatures ranging from 100 K to about 50 K. Sensitivity obtained at 110 GHz was comparable to that of crystalline detectors. The mixing experiments were performed in a 25 GHz frequency band and indicated that the detector response time was less than 40 ps. The intermediate frequency was varied from 50 MHz to 5 GHz without any decrease in the mixer output up to 3 GHz. Auxiliary emission measurements performed at 12 GHz and down to 4.2 K revealed that the detector low-temperature performance limit was associated with microwave radiation from clusters of intergrain weak links arranged in multiloop quantum interferometers.

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