Abstracts

Microwave Detectors Based on Granular High-Tc Thin Films (1989 Vol. II [MWSYM])

J. Konopka, R. Sobolewski, G. Jung, W. Kula, A. Konopka, P. Gierlowski and S.J. Lewandowski. "Microwave Detectors Based on Granular High-Tc Thin Films (1989 Vol. II [MWSYM])." 1989 MTT-S International Microwave Symposium Digest 89.2 (1989 Vol. II [MWSYM]): 635-638.

Detecting and mixing properties of superconducting YBCO and BCSCO granular thin film structures have been investigated. The microstrips were deposited on various substrates by two different techniques. Device performance has been tested in 25, 55 and 110 GHz bands and temperature range from 50 to 80K. Detectors response was bias and temperature dependent. The mixing experiments were performed in 25 GHz frequency band. The i.f. frequency was varied from 50 MHz to 5 GHz without any decrease in the mixer output up to 3 GHz. YBCO and BCSCO thin film devices are operational in temperature range from T = Tc-10K to about 50K. The lower limit is imposed by quantum effects which render erratic the output signal. Although the mechanism responsible for the detecting and mixing properties have not been positively identified, the auxiliary emission measurements performed at 12 GHz and down to 4.2K revealed that low temperature performance limit is associated with Josephson radiation from weak-link clusters composed of multi-loop quantum interferometers.

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