Abstracts

Josephson Junctions as Heterodyne Detectors

Y. Taur, J.H. Claassen and P.L. Richards. "Josephson Junctions as Heterodyne Detectors." 1974 Transactions on Microwave Theory and Techniques 22.12 (Dec. 1974, Part I [T-MTT] (Special Issue on the Proceedings of the First International Conference on Submillimeter Waves and Their Applications)): 1005-1009.

Heterodyne detection with a point-contact Josephson junction has been investigated both experimentally and theoretically. The measured performance of the device at 36 GHz is in good agreement with the theory. By operating vanadium point contacts at 1.4 K, we have achieved a single-sideband (SSB) mixer noise temperature of 54K with a conversion gain of 1.35 and a signal bandwidth on the order of 1 GHz. From our results we can extrapolate a potentially impressive performance for these devices at submillimeter wavelengths.

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