Abstracts

Characterization of Low-Noise Quasi-Optical SIS Mixers for the Submillimeter Band

M.C. Gaidis, H.G. LeDuc, M. Bin, D. Miller, J.A. Stern and J. Zmuidzinas. "Characterization of Low-Noise Quasi-Optical SIS Mixers for the Submillimeter Band." 1996 Transactions on Microwave Theory and Techniques 44.7 (Jul. 1996, Part I [T-MTT]): 1130-1139.

We report on the development of low-noise quasi-optical SIS mixers for the frequency range 400-850 GHz. The mixers utilize twin-slot antennas, two-junction tuning circuits, and Nb-trilayer junctions. Fourier-transform spectrometry has been used to verify that the frequency response of the devices is well predicted by computer simulations. The 400-850 GHz frequency band can be covered with four separate fixed-tuned mixers. We measure uncorrected double-sideband receiver noise temperatures around 5hv/k/sub B/ to 700 GHz, and better than 540 K at 808 GHz. These results are among the best reported to date for broadband heterodyne receivers.

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