Abstracts

Millimeter Wave Superconducting Receivers

Q. Hu, CA. Mears and P.L. Richards. "Millimeter Wave Superconducting Receivers." 1991 MTT-S International Microwave Symposium Digest 91.1 (1991 Vol. I [MWSYM]): 409-412.

We review the recent work done at Berkeley on the development of millimeter wave heterodyne mixers using superconductor-insulator-superconductor (SIS) junctions. Two types of mixers have been developed: a conventional waveguide system using a resonant cavity and a open-structure quasioptical system using planar antennas and lenses. Using the waveguide system, we have achieved the lowest mixer noise level yet achieved (within 25% of the quantum limit) at 95 GHz. The quasioptical system has achieved a good mixer performance up to 200 GHz, and it has shown great promise to be used at submillimeter wavelengths.

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