Abstracts

Integrated Tuning Elements for Millimeter and Sub-Millimeter SIS Mixers

G. Pance and M.J. Wengler. "Integrated Tuning Elements for Millimeter and Sub-Millimeter SIS Mixers." 1992 MTT-S International Microwave Symposium Digest 92.1 (1992 Vol. I [MWSYM]): 337-340.

We present two different designs of integrated tuning elements for superconducting tunnel junction (SIS) mixers. The structures consist of a self-complementary log-periodic antenna, superconductor-insulator-superconductor (SIS) tunnel junction, and the broadband superconducting tuning circuit placed between the center of the antenna and the SIS junction. The designs allow good coupling to relatively large area (7 μm^2) junctions. The best design has 3-dB bandwidth of 102 GHz at the central frequency of 98 GHz, and 75 GHz at the central frequency of 492 GHz. Microwave scale model measurements show excellent agreement with the simulation results. Devices are being fabricated in niobium technology at Westinghouse Science & Technology Center.

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