Abstracts

Propagation Model for Ultrafast Signals on Superconducting Dispersive Striplines

An algorithm suitable for the computer-aided design of transmission lines is used to model the propagation of picosecond and subpicosecond electrical signals on superconducting planar transmission lines. Included in the computation of a complex propagation factor are geometry-dependent modal dispersion and the frequency-dependent attenuation and phase velocity which arise as a result of the presence of a superconductor in the structure. The results of calculations are presented along with a comparison to experimental data. The effects of modal dispersion and the complex surface conductivity of the superconductor are demonstrated, with the conclusion that it is necessary to incorporate both phenomena for accurate modeling of transient propagation in strip transmission lines.

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