Abstracts

Investigation of microwave propagation in high-temperature superconducting waveguides

G. Yassin, G. Jung, V. Dikovsky, I. Barboy, M. Kambara, D.A. Cardwell and S. Withington. "Investigation of microwave propagation in high-temperature superconducting waveguides." 2001 Microwave and Wireless Components Letters 11.10 (Oct. 2001 [MWCL]): 413-415.

It is well known that the boundary conditions of the electromagnetic fields on the surface of a superconductor are influenced by the field penetration into the material. In a series of recent publications, it has been suggested that this effect substantially influences the wave propagation in high-temperature superconducting waveguides, to the extent that the mode order becomes different than that predicted for perfect conductor waveguides. In this paper, we present experimental investigation of this effect. We show that the effect of superconductivity on the wave propagation in waveguides is very small for temperatures well below the transition temperature and away from cutoff. We also discuss the behavior of the waveguide near cutoff and very close to the transition temperature.

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