Abstracts

Helical Resonators for Measuring Dielectric Properties of Materials

W. Meyer. "Helical Resonators for Measuring Dielectric Properties of Materials." 1981 Transactions on Microwave Theory and Techniques 29.3 (Mar. 1981 [T-MTT]): 240-247.

A theoretical and practical investigation is given of superconducting helical resonators with quality factors greater than 10/sup 8/ which allow the determination of dielectric loss tangents in the frequency range of 0.1 to 5 GHz and below 15 K with high accuracy. The underlying measurement theory is an extension of perturbation theory. They are evaluated for the fields in a shielded multiple quarter-wave helical resonator with a cylindrical dielectric specimen inside the helix. Measurement results on optimized resonators made from superconducting Nb and Nb/sub 3/Sn are reported as well as further applications.

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