Abstracts

Hybrid Dielectric/HTS Resonators and Their Applications

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Interest in HTS material applications has exploded in the past few years fueled by continuing progress in superconductor fabrication techniques. However, in typical microwave structures utilizing these materials in the form of thin films, HTS compatible dielectric substrates and their dielectric losses are a performance limiting factor. This paper presents a novel concept of using dielectric resonators in conjunction with HTS materials. This hybrid approach offers several advantages: dielectric resonator materials have extremely low losses at cryogenic temperatures, reduced size in comparison to traditional dielectric resonators, exceptional temperature stability, tunability, and versatility (any HTS material can be easily substituted in the proposed filter structures). Basic dielectric /HKS resonator structures are shown. Novel filter configurations utilizing these resonators and experimental results are presented.

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