Abstracts

Rigorous Analysis of Shielded Cylindrical Dielectric Resonators by Dyadic Green's Functions

B. Sauviac, P. Guillot and H. Baudrand. "Rigorous Analysis of Shielded Cylindrical Dielectric Resonators by Dyadic Green's Functions." 1994 Transactions on Microwave Theory and Techniques 42.8 (Aug. 1994 [T-MTT]): 1484-1493.

This paper presents a rigorous approach for the calculation of resonant frequencies of a metallic cavity loaded by a dielectric resonator. Tangential fields at the air-dielectric interface are derived from dyadic Green's functions and boundary conditions are applied. Dyadic Green's identity and the boundary element method are used to solve the numerical problem. In order to validate the method, resonant frequencies are calculated for a cylindrical cavity loaded with a dielectric cylinder and compared with available results in the literature. Then resonance is studied for dielectric cylinder in a rectangular cavity. In the case of multiple dielectric resonators in the cavity, the coupling coefficient is computed with an original method based on the use of symmetries.

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