Abstracts

On the Complex Resonant Frequency of Open Dielectric Resonators

M. Tsuji, H. Shigesawa and K. Takiyama. "On the Complex Resonant Frequency of Open Dielectric Resonators." 1983 Transactions on Microwave Theory and Techniques 31.5 (May 1983 [T-MTT]): 392-396.

An analytical method is presented for calculating accurately the complex resonant frequency of dielectric pillbox resonators. In this method, an approximated field of the resonator is expanded into a truncated series of solutions of the Hehnholtz equation in the spherical coordinates, and the boundary condtion on the resonator surface is treated in the least-squares sense. The resonant frequency and the intrinsic Q value due to radiation loss are obtained in the form of approximation converging to the exact values. Numericaf results are compared with previously published calculations, which show that the present method is a relatively simple and effective one.

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