Abstracts

On the Theory of Low-Frequency Excitation of Cavity Resonators

H.A. Mendez. "On the Theory of Low-Frequency Excitation of Cavity Resonators." 1970 Transactions on Microwave Theory and Techniques 18.8 (Aug. 1970 [T-MTT]): 444-448.

The theory of modal expansions in an ideal cavity, in the presence of low-frequency current and charge distributions, is developed using the scalar and dyadic Green's functions. The case of a vertical antenna in a rectangular cavity is solved in detail, and the need for irrotational as well as solenoidal eigenvectors in the solution is established. The solutions are obtained in double-sum form, achieving an important computational advantage. Finally, the theory is checked against experimentally measured field distributions, obtaining excellent agreement and shedding light onto the unique behavior of the fields inside a cavity at frequencies below the first resonance.

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