Abstracts

On the Resonant Frequency of a Reentrant Cylindrical Cavity

M. Jaworski. "On the Resonant Frequency of a Reentrant Cylindrical Cavity." 1978 Transactions on Microwave Theory and Techniques 26.4 (Apr. 1978 [T-MTT]): 256-260.

A new efficient method determining the resonant frequency of a reentrant cylindrical cavity is suggested. The method is based on solving the Helmholtz equation within two cavity regions and matching the solutions across the boundary surface. Contrary to similar formulations published previously, the continuity conditions on the boundary are imposed in a rigorous way. As a result the solution is obtained in a form of succesive approximations converging to the exact resonant frequency when a number of iterations tend toward infinity. Numerical examples are given for a few reentrant cavities of typical dimensions. Comparison is also made with experimental data as well as other theoretical results.

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