Abstracts

Analysis of Metallic Waveguides with Rectangular Boundaries by Using the Finite-Difference Method and the Simultaneous Iteration with the Chebyshev Acceleration

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A numerical procedure based on the finite-difference method and simultaneous iteration of the power method in conjunction with the Chebyshev acceleration technique is utilized to analyze the metallic waveguides. Due to the efficiency of the present sparse matrix eigenproblem solver, lots of unknowns can be used in the domains of the waveguide cross-sections. Therefore, accurate cutoff wavenumbers or frequencies can be obtained by using the simple finite-difference method for the commonly used metallic waveguides such as the L-shaped, single-ridged, double-ridged, and rectangular coaxial waveguides. Some discrepancies with the numerical results in the recent literature are found and detailed discussions are provided to verify the correctness of the present results.

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