Abstracts

Cutoff wavenumbers in truncated waveguides

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Truncated waveguides are used in some microwave components. The cutoff wavenumbers in truncated circular waveguide and truncated square waveguide are desired but usually difficult to be computed. In this paper, they are efficiently determined using the unified method that we proposed earlier. Both TE-polarized and TM-polarized modes are studied. To demonstrate the applicability and correctness of this method, two practical examples are considered, one is a truncated circular waveguide and the other is a truncated square waveguide. Results obtained for the two cases are compared with existing data in literature and a good agreement is observed. A further extension of the work is made to compute cutoff wavenumbers of a truncated elliptical waveguide. It is found from the analysis that the cutoff wavenumbers in these irregular waveguides can be computed easily, rapidly, and accurately using the unified method.

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