Abstracts

Comparison of Mode-Matching and Differential Equation Techniques in the Analysis of Waveguide Transitions

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The solution of the continuous waveguide transition problem can be obtained by discretizing the boundary and applying mode matching or by using a system of ordinary differential equations. Both approaches involve approximate representations of the boundary. When using the differential equation approach, it was found necessary to consider the transition as several sections in series in order to avoid numerical instabilities. When this is done, one may cascade rising a generalized scattering matrix approach or a generalized ABCD matrix method. Results are shown comparing the accuracy of the boundary discretization approach and the differential equation approach for the Marie transducer and for linear transitions of various Iengths in rectangular waveguide. Experimental results are also given for the Marie transducer.

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