Abstracts

Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)

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This short paper presents a general computer analysis of gradually tapered waveguide with arbitrarily shaped cross sectious. The technique combines coupled-mode theory with numerical methods for solving the uniform waveguide problem. The coupling coefficients are computed by using eigenvalues and eigenfunctions obtained numerically. The mode amplitudes are obtained either by numerical solution of a set of differential equations or from a closed-form solution. The applicability of this technique is illustrated by the analysis and measurement of two transitions. It is shown that theoretical prediction of coupled-mode amplitudes is reliable for gradual tapers where the flare angle is small. For large flare angles, more rigorous coupled-mode theory has to be employed.

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