Abstracts

On the Computation of Complex Modes in Lossless Shielded Asymmetric Coplanar Waveguides (Short Papers)

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We compute complex modes in lossless shielded asymmetric coplanar waveguides (CPW's) using the spectral domain technique. The slot asymmetry is found to significantly affect the existence of the complex modes. These modes are found to exist at low microwave frequencies even when using materials with a low permittivity. We found that waveguide modes degenerate into complex modes more frequently than CPW (pi) and slotline (c) modes. When the structures are highly asymmetrical and when the dielectric substrates are thick or have a high permittivity, the degeneration of lower-order c-modes into complex modes is detected. Other forms of mode conversion, where a waveguide mode is converted to a c-mode, are also observed, especially in highly asymmetric structures and when using dielectric materials of a high permittivity or of a large thickness. Numerical convergence of the complex modes' propagation constants is also examined.

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