Abstracts

Systematic Characterization of the Spectrum of Unilateral Finline

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The fundamental mode of finline is well documented. A sufficiently complete knowledge of the higher mode spectrum, however, is necessary for the treatment of discontinuities. This paper is concerned with a rigorous approach to the problem of the spectrum of unilateral finline on the basis of a variational solution in the space domain and transverse equivalent network considerations. We call this method transverse resonance diffraction. Having satisfied the correct edge condition a priori, the analysis produces highly accurate dispersion characteristics calculated at each "spot frequency" for the fundamental and higher order modes with matrices of very low order. By exploiting the quasi-analytical character of the model, it is possible to derive a systematic and complete characterization of the spectrum in terms of "mode families." Moreover, simple-to-use wide-band approximations to the dispersion characteristics are also obtained which are suitable for evacuation by a desktop calculator.

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