Abstracts

The Spectral-Domain Approach for Microwave Integrated Circuits

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A survey is given of the so-called spectral-domain approach, an analytical and numerical technique particularly suited for the solution of boundary-value problems in microwave and millimeter-wave integrated circuits, The mathematical formulation of the analytical part of that approach is described in a generalized notation for two- and three-dimensional strip and slot-type fields. In a similar way, the numerical part of the technique is treated, keeping always in touch with the mathematical and physical background, as well as with the respective microwave applications. A discussion of different specific aspects of the approach is presented and outlines the peculiarities of shielded-, covered-, and open-type problems, followed by a brief review of the progress achieved in the last decade (1975-1984). we survey closes with considerations on numerical efficiency, demonstrating that spectral-domain computations can by speeded up remarkably by analytical preprocessing. The presented materal is based on ten years of active involvement by the author in the field and reveals a variety of contributions by West German researchers previously not known to the intenational microwave community.

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