Abstracts

FD-TD/Matrix-Pencil Method for the Efficient Simulation of Waveguide Components Including Structures of More General Shape

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A combined FD-TD/matrix-pencil method is introduced for the efficient and rigorous calculation of the full-wave modal S-parameters of waveguide components including structures of more general shape or of high complexity. The application of the S-parameter definition for unmatched ports requires merely standard Mur's absorbing boundaries for reliable results, and a nonorthogonal or contour path mesh formulation allows the convenient inclusion of curved boundaries. The efficiency of the method is demonstrated at the analysis of waveguide components of practical importance, such as the twisted waveguide, the twisted waveguide bend, and the waffle-iron filter. The proposed method is verified by excellent agreement with FEM/mode-matching results.

❑ Return to main document.