

Abstracts

A New Schema for Combining Numerical and Analytical Methods for Rigorous Analysis of Waveguide Circuits

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A new schema is proposed for rigorous analysis of waveguide circuits which are composed of a number of discontinuities. The schema combines numerical techniques with analytical techniques, such as the mode-matching method. The concept is the following; for a general complicated segment of waveguide circuit, a numerical technique is used to generate the multi-mode general scattering matrix, while the mode-matching technique is use to deal with all the regular discontinuities. The final result is obtained by cascading the general scattering matrices. To validate the schema, a numerical example is given. The result obtained with the new schema agrees very well with results obtained using full numerical techniques and experiment results.

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