Abstracts

Macro-elements for efficient FEM simulation of small geometric features in waveguide components (2000 Vol. I [MWSYM])

Y. Zhu and A.C. Canagellaris. "Macro-elements for efficient FEM simulation of small geometric features in waveguide components (2000 Vol. I [MWSYM])." 2000 MTT-S International Microwave Symposium Digest 00.1 (2000 Vol. I [MWSYM]): 117-120.

This paper introduces a novel class of specially-constructed elements aimed at the expedient finite-element modeling of waveguide components containing fine geometric/material features such as dielectric and conducting posts. Instead of utilizing a very fine grid to resolve such fine features, special elements are constructed, of the size of the regular grid, that capture accurately the electromagnetic properties of the fine features. Use of the proposed macro-elements leads to a significant reduction in the number of unknowns in the finite-element approximation of the structure without sacrificing solution accuracy.

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