Abstracts

A fast multipole-method-based calculation of the capacitance matrix for multiple conductors above stratified dielectric media

Y.C. Pan, W.C. Chew and L.X. Wan. "A fast multipole-method-based calculation of the capacitance matrix for multiple conductors above stratified dielectric media." 2001 Transactions on Microwave Theory and Techniques 49.3 (Mar. 2001 [T-MTT]): 480-490.

An efficient static fast-multipole-method (FMM)-based algorithm is presented in this paper for the evaluation of the parasitic capacitance of three-dimensional microstrip signal lines above stratified dielectric media. The effect of dielectric interfaces on the capacitance matrix is included in the stage of FMM when outgoing multipole expansions are used to form local multipole expansions by the use of interpolated image outgoing-to-local multipole translation functions. The increase in computation time and memory usage, compared to the free-space case, is, therefore, small. The algorithm retains O(N) computational and memory complexity of the free-space FMM, where N is the number of conductor patches.

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