Abstracts

Capacitance extraction of 3-D conductor systems in dielectric media with high-permittivity ratios

J. Tausch and J. White. "Capacitance extraction of 3-D conductor systems in dielectric media with high-permittivity ratios." 1999 Transactions on Microwave Theory and Techniques 47.1 (Jan. 1999 [T-MTT]): 18-26.

We describe a perturbation formulation for the problem of computing electrostatic capacitances of multiple conductors embedded in multiple dielectric materials. Unlike the commonly used equivalent-charge formulation (ECF), this new approach insures that the capacitances are computed accurately even when the permittivity ratios of the dielectric materials are very large. Computational results from a three-dimensional multipole-accelerated algorithm based on this approach are presented. The results show that the accuracy of this new approach is nearly independent of the permittivity ratios and superior to the ECF for realistic interconnect structures.

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