Abstracts

Efficient hybrid TLM/mode-matching analysis of packaged components

M. Righi, J.L. Herring and W.J.R. Hoefer. "Efficient hybrid TLM/mode-matching analysis of packaged components." 1997 Transactions on Microwave Theory and Techniques 45.10 (Oct. 1997, Part I [T-MTT]): 1715-1724.

A combination of the transmission-line matrix (TLM) method and time-domain mode-matching method is proposed. The resulting hybrid algorithm takes full advantage of time-domain methods for regions with highly complex geometries while exploiting the efficiency of analytical formulations for the more regular regions. The computational aspects and the errors involved in the procedure are investigated. The approach is demonstrated with the analysis of a packaged microstrip line containing a via-hole, and results are compared with independent measurements. While the planar circuit is discretized by a TLM mesh, the field in the package is decomposed into modal fields. The two sub-domains are joined by modal diakoptics. Thus, we obtain not only a significant reduction in computer time and memory, but also gain new physical insight into the physics of package resonance.

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