Abstracts

A Quasi-Static Modification of TLM at Knife Edge and 90° Wedge Singularities (Dec. 1996, Part II [T-MTT])

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A common drawback of numerical techniques such as transmission line method (TLM) and finite-difference time-domain method (FDTD) resides in the difficulty to accurately describe the electromagnetic field in structures with singularities. In this paper a local modification of the two-dimensional (2-D) TLM algorithm for the nodes surrounding a knife edge and a 90° wedge is proposed. A quasi-static approximation of the field is used to derive an equivalent circuit of the edge. The proposed theory is then extended to the characterization of infinitely thin septa, the vertex of which is located anywhere between the nodes of the TLM mesh. The proposed corner correction is compared with the uncorrected TLM results and with data available in the literature, revealing a marked enhancement in the accuracy and convergence of the results.

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