Abstracts

A Class of Symmetrical Condensed Node TLM Methods Derived Directly from Maxwell's Equations

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A series of general transmission line matrix (TLM)-type methods, which include the symmetrical condensed node method, are derived directly from Maxwell's curl equations without recourse to transmission line models. Written as a system of conservation laws, Maxwell's equations in 3-D plus time are decomposed along the orthogonal characteristic directions of a rectangular grid. The Riemann invariants in this method correspond to the voltage pulses of the TLM method. A new method of handling inhomogeneous media is proposed based on a new transfer event. The dispersive nature of these schemes is also investigated.

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