

A Field Theoretical Comparison of FDTD and TLM

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A field theoretical derivation of the three-dimensional TLM method with expanded node and of the three-dimensional TLM method with asymmetrical condensed node is given. In the derivation, the Method of Moments is applied to Maxwell's equations. The wave amplitudes are related to the tangential field components at the boundaries of the TLM cell. The same approach is applied to derive the FDTD method from Maxwell's equations. A complete dispersion analysis is given for the two TLM methods as well as for the FDTD method.

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