Abstracts

Full-Wave Analysis of Guiding Structures Using a 2-D Array of 3-D TLM Nodes

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This paper introduces a novel TLM approach to the full-wave analysis of guided wave structures. Instead of using real pulses as in the conventional TLM method, complex pulses are used in this new approach. Therefore a non-reciprocal phase shift in z-direction can be introduced which can be used to connect the z-arms in a 3-D node directly. As a result, the 3-D array of 3-D nodes, normally required in the TLM method to calculate the propagation and attenuation constant, is reduced to only one mesh unit in z-direction (2-D array of 3-D nodes). The propagation constant is determined by chosing a value and then calculating the frequency at which this value is valid from the Fourier Transform of the impulse response. Losses are found by computing the exponential decay of time harmonic solutions at the eigenfrequencies of the structure.

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