Abstracts

Modeling of nonlinear active and passive devices in three-dimensional TLM networks

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We propose an extension for the TLM-SC node to analyze three-dimensional problems including nonlinear active and passive devices. The nonlinear behavior of the lumped circuit is decoupled from the impulse scattering at the nodes, yielding a general and systematic methodology to embed arbitrary nonlinear devices into the TLM mesh. Two canonical examples are given to demonstrate the versatility of the method. These include a Tunnel diode oscillator with DC biasing network and the modeling of a pn-junction diode.

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