Abstracts

Extending Spice-like analog simulator with a time-domain full-wave field solver

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In this paper an analog circuit simulator is integrated with a versatile full-wave finite-difference time-domain (FDTD) electromagnetic (EM) solution module. The circuit-field co-simulation method is introduced to connect a Spice-like circuit simulator with an FDTD solver for simulating hybrid high-speed systems. The interface that links both simulators is derived directly from the Maxwell's equations and is simple to implement. Results from example circuits show that the proposed technique is highly accurate and stable and is suitable for integrating with any existing analog simulators, enhancing their capabilities in high-frequency circuit and packaging analysis where field effects cannot be ignored.

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