

Abstracts

A unified approach for mixed EM and circuit simulation using model-reduction techniques

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With the continually increasing operating speeds, the boundary between EM problems and general circuit designs is narrowing rapidly. There is a great demand for efficiently combining EM solutions with general purpose circuit simulators such as SPICE. In this paper we present a novel and a unified approach based on model-reduction techniques to combine EM formulations such as FEM, directly into general purpose circuit simulators. The method is two to three order faster than the previously published methods and is suitable for simulating large number of electromagnetic devices in a general circuit environment consisting of lumped/distributed circuit elements and nonlinear terminations.

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