Abstracts

Interpolating wavelet scheme toward global modeling of microwave circuits

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We use an interpolating wavelet scheme to solve the nonlinear partial differential equations that characterize the behavior of semiconductor devices. We apply this method to a typical field effect transistor. The I-V characteristics are obtained and the accuracy is compared with the basic finite difference scheme. An error of 2% is obtained with 90% reduction in the number of unknowns at steady state. This is the first step toward a unified numerical technique that uses wavelets to solve Maxwell's equations and the semiconductor equations for global modeling of high-frequency circuits.

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