Abstracts

Application of C-COM for microwave integrated-circuit modeling

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The concurrent complementary operators method (C-COM) is extended for the FDTD simulation of microwave integrated circuits for the first time. Fields in the boundary layers are computed twice with the dispersive boundary condition (DBC) and its complementary operator to truncate the FDTD lattices. The two simulations are averaged to annihilate the first order reflections from the truncated boundary. Numerical error analysis show that the reflections are further suppressed by at least 20 dB due to the implementation of complementary operators, and the setup of parameters becomes easier and more robust. A flexible and highly efficient absorbing boundary condition for guided wave problems is thus obtained through the combination of C-COM and DBC. Simulation results for a modified microstrip transmission line and a microstrip impedance transformer are given to validate this method.

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