Abstracts

Circuit Models for Three-Dimensional Geometrices Including Dielectrics

The Partial Element Equivalent Circuit (PEEC) approach has proven to be useful for the modeling of many different electromagnetic problems. The technique can be viewed as an approach for the electrical circuit modeling for arbitrary three dimensional geometries. For example, the "3D transmission line" properties of VLSI interconnects and packages can be modeled. Recently, we extended the method to include retardation with the rPEEC models. So far the dielectrics have been taken into account only in an approximate way. In this paper, we generalize the technique to include arbitrary homogeneous dielectric regions. The new circuit models are applied in the frequency as well as the time domain. The time solution allows the modeling of VLSI systems which involve interconnects as well as nonlinear transistor circuits.

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