عنوان مقاله:

Spice Compatible Model for Multiple Coupled Nonuniform Transmission Lines Application in Transient Analysis of VLSI Circuits

نویسندگان:

K. Ansari - *Electerical Engineering, Ferdowsi University of Mashhad*

A. Cheldavi - *Electerical Engineering, Iran University of Science & Technology*

خلاصه مقاله:

An SPICE compatible model for multiple coupled nonuniform lossless transmission lines (TL's) is presented. The method of the modeling is based on the steplines approximation of the nonuniform TLs and quasi-TEM assumptions. Using steplines approximation the system of coupled nonuniform TLs is subdivided into arbitrary large number of coupled uniform lines (steplines) with different characteristics. Then using modal decomposition method the system of coupled partial differential equations for each step is decomposed to a number of uncoupled ordinary wave equations describing uncoupled uniform TLs in each step. To satisfy the boundary conditions at the discontinuities a new model is developed. Therefore each step of the system can be modeled in SPICE using a set of ideal delay lines representing uncoupled TLs and some linear-dependent voltage and current sources. Finally some examples are given to show the validity and usefulness of the model.

کلمات کلیدی:
VLSI Circuits, Interconnect, Transient Analysis, SPICE Model

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/1415982