Abstracts

A Convolution-Based Black-Box Approach for Incorporating Linear Circuit Blocks Described by Frequency-Domain Data Into a Non-Linear Transient Time-Domain Simulator

P. Halloran and T.J. Brazil. "A Convolution-Based Black-Box Approach for Incorporating Linear Circuit Blocks Described by Frequency-Domain Data Into a Non-Linear Transient Time-Domain Simulator." 1993 MTT-S International Microwave Symposium Digest 93.3 (1993 Vol. III [MWSYM]): 1189-1192.

The requirements of the microwave MMIC and high speed digital engineer have led to the need for a true transient time domain simulator capable of incorporating frequency-dependent phenomena. In this paper a new convolution-based black box approach is used to incorporate arbitrary linear circuit blocks, described by frequency-dependent s-parameters, into a general-purpose non-linear circuit analysis program (SPICE) yielding a general non-linear transient time domain simulator. The technique is validated by comparisons with measurement and with conventional SPICE simulation.

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