Abstracts

A wavelet based time domain moment method for the analysis of three-dimensional electromagnetic fields

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A novel time domain simulation approach for analyzing real three-dimensional (3-D) passive microwave structures is presented. The electromagnetic fields of the structure under investigation are expanded into a hierarchical system of wavelets and scaling functions for all three dimensions leading to a stable, multiscale algorithm. By neglecting small wavelet coefficients and thereby reducing the computational effort, this method is equivalent to a finite difference in time domain scheme with a time dynamic space adaptive grid. An overview of the main ideas and advantages of this new method as well as the results of two numerical examples are given.

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