Abstracts

A New Stacked Two-Dimensional Spectral Iterative Technique (SIT) for Analyzing Microwave Power Deposition in Biological Media

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Conventional numerical methods for analyzing power deposition in biological media have been restricted to bodies which are relatively small electrically. A new, stacked-two-dimensional-spectral-iterative-technique (SIT), presented below, does not involve the generation and inversion of a matrix and is capable of analyzing larger bodies. It is based on modeling the body by a set of planar parallel slabs and utilizing the simple (convolution-type) relationship between a current distribution on any slab and the field due to this current. This invertible relationship is conveniently formulated in the transform domain in a strictly algebraic fashion. The interactions between the various slabs are also simple and algebraic in the spectral domain. The solution is generated in an iterative manner by applying these relationships sequentially over the slabs until convergence is achieved. Discussion on convergence and numerical examples are given.

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