Abstracts

Full-Wave Perturbation Theory for the Analysis of Coupled Microstrip Resonant Structures

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A full-wave perturbation theory for the system of N coupled microstrip disk structures is presented. The theory is based on the electric field integral equation description of the circuit, which includes all of the wave phenomena associated with the conductors and the surrounding media. This method is suitable for quantification of nearly degenerate coupling between open microstrip disks, yielding the complex system eigenmodes. For the case of two coupled disks, the perturbation theory analytically separates, though simultaneously solves for, the symmetric and antisymmetric system eigenmodes. The development of the perturbation theory leads to good physical insight for this mode splitting phenomena. Numerical results obtained with the perturbation theory agree well with those obtained by a more accurate method of moments solution to the coupled set of electric field integral equations, as well as with experimental data.

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