Abstracts

New technique using poles and modes derivatives for frequency and geometry parameterization of microwave structures

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The present work describes a novel technique of parameterization for microwave circuit design and modeling in view of a full-wave 3D electromagnetic (EM) optimization. The proposed technique is based on the poles and modes computation using the finite element method and the use of the determined poles and modes for obtaining the transfer function characterizing the studied microwave structure frequency response over a large frequency band. The technique is then extended to geometry parameterization by computing the geometric derivatives of the determined poles and their corresponding modes. The computation of the derivatives allows the establishment of a very accurate parametric model describing the variation of the poles and the modes as a function of the circuit geometry deformation. Therefore, no more simulations or additional meshing are needed to evaluate the response of the circuit when its dimensions are changed.

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