Abstracts

Field-extracted lumped-element models of coplanar stripline circuits and discontinuities for accurate radiofrequency design and optimization

Lei Zhu and Ke Wu. "Field-extracted lumped-element models of coplanar stripline circuits and discontinuities for accurate radiofrequency design and optimization." 2002 Transactions on Microwave Theory and Techniques 50.4 (Apr. 2002 [T-MTT]): 1207-1215.

Presents original lumped-element models of a large variety of coplanar stripline (CPS) circuits and discontinuities for accurate design and optimization of radiofrequency integrated circuits. These circuit models are extracted by applying a recently proposed deembedding technique called short-open calibration to calibrate the calculated field parameters obtained from the full-wave method of moments (MoM). It is realized by defining the two calibration standards, i.e., short and open elements, to evaluate and remove the error terms existing in the deterministic MoM algorithm, such as the approximation of port discontinuity and inconsistency of two-dimensional and three-dimensional characterizations of CPS external lines. In contrast to the static models, these field-extracted models can account for all the physical effects subject to the core area of CPS discontinuity, including frequency dispersion, high-order modes, and radiation loss. With this scheme, several CPS circuits and discontinuities are investigated over a wide frequency range to formulate their lumped-element models.

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