Abstracts

A Comprehensive Study of Numerical Anisotropy and Dispersion in 3-D TLM Meshes

P. Berini and K. Wu. "A Comprehensive Study of Numerical Anisotropy and Dispersion in 3-D TLM Meshes." 1995 Transactions on Microwave Theory and Techniques 43.5 (May 1995 [T-MTT]): 1173-1181.

This paper presents a comprehensive analysis of the numerical anisotropy and dispersion of 3-D TLM meshes constructed using several generalized symmetrical condensed TLM nodes. The dispersion analysis is performed in isotropic lossless, isotropic lossy and anisotropic lossless media and yields a comparison of the simulation accuracy for the different TLM nodes. The effect of mesh grading on the numerical dispersion is also determined. The results compare meshes constructed with Johns' symmetrical condensed node (SCN), two hybrid symmetrical condensed nodes (HSCN) and two frequency domain symmetrical condensed nodes (FDSCN). It has been found that under certain circumstances, the time domain nodes may introduce numerical anisotropy when modelling isotropic media.

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