Abstracts

Simple equivalent circuit modeling of small apertures in transmission line matrix (TLM) method

G. Tardioli and W.J.R. Hoefer. "Simple equivalent circuit modeling of small apertures in transmission line matrix (TLM) method." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 901-904.

A technique to incorporate a small aperture model into the Transmission Line Matrix (TLM) code based on Bethe's small hole coupling theory is presented. Electrically small apertures are modeled as electric and magnetic dipoles. A link between these equivalent dipoles and a simple equivalent circuit is found and implemented in the TLM mesh. The method has been validated by calculating the first resonant frequency of two cavities coupled by a narrow aperture, and by comparing the results with those obtained by TLM analysis with increasingly denser meshes. The obtained results confirm the validity of the approach and the high potentiality in terms of accuracy and savings in memory and CPU time requirements.

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