Abstracts

Characteristic Modes for Aperture Problems

R.F. Harrington and J.R. Mautz. "Characteristic Modes for Aperture Problems." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 500-505.

A theory of characteristic modes is developed for problems consisting of two regions coupled by an aperture. The modes are derived from a weighted eigenvalue equation whose eigenfunctions define a set of real expansion functions for the equivalent magnetic current over the aperture region and whose eigenvalues are the modal aperture admittances. A modal solution is obtained for an aperture of arbitrary size and shape coupling two regions of arbitrary size and shape. The theory provides a rigorous basis for the augmentation of the Bethe-hole theory by radiation conductance terms, for its extension to apertures of larger electrical size, and for its extension to apertures in nonplanar conducting surfaces.

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