Abstracts

A pole-free modal field-matching technique for eigenvalue problems in electromagnetics

S. Amari and J. Bornemann. "A pole-free modal field-matching technique for eigenvalue problems in electromagnetics." 1997 Transactions on Microwave Theory and Techniques 45.9 (Sep. 1997 [T-MTT]): 1649-1653.

A pole-free formulation of the modal field-matching technique (MFMT) as applied to eigenvalue problems in electromagnetics is presented in this paper. The poles in the determinantal equation are systematically eliminated, without requiring previous knowledge of their locations or nature, resulting in well-behaved determinants. The minimum singular value in a singular-value decomposition of the pole-free matrix exhibits much wider dips than that obtained from the standard MFMT. The pole-free formulation is applied to determine the cutoff wavenumbers of a ridged waveguide to demonstrate its validity and efficiency.

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