Abstracts

Matrix Singular Value Decomposition for Pole-Free Solutions of Homogeneous Matrix Equations as Applied to Numerical Modeling Methods

V.A. Labay and J. Bornemann. "Matrix Singular Value Decomposition for Pole-Free Solutions of Homogeneous Matrix Equations as Applied to Numerical Modeling Methods." 1992 Microwave and Guided Wave Letters 2.2 (Feb. 1992 [MGWL]): 49-51.

A general technique for solving homogeneous matrix equations as applied to numerical modeling procedures in microwave and millimeter-wave structures is introduced. By using singular value decomposition, well-known numerical problems related to poles and steep gradients in the determinant function are eliminated. The proposed technique is generally applicable, improves the accuracy and reliability of computed results, and significantly reduces the CPU time due to a more moderate behavior of the function to be analyzed. A dispersion characteristics example of a conductor-backed slotline MMIC structure illustrates the advantage of the pole-free formulation over conventional determinant calculations.

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