

研究简报

本征权边界积分法解任意截面波导传输问题

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摘要

本文选取本征函数作为权函数, 由格林第二恒等式建立边界积分方程, 并采用边界基形式得到线性齐次方程组. 这种方法不仅降低了系数矩阵的维数, 而且使其各项仍保持为简单一项, 减少了计算量. 本文提供了几种常见金属波导的例子, 计算结果既收敛快、又足够准确.

关键词 [边界积分法](#) [金属波导](#) [本征值问题](#) [截止波数](#)

分类号

SOLUTION OF ARBITRARY CROSS-SECTION WAVEGUIDE USING METHOD OF EIGEN-WEIGHTED BOUNDARY INTEGRAL EQUATION

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Abstract

Based on the second kind of Green's identity, a boundary integral equation for arbitrary cross-section waveguide is transformed to a system of linear homogeneous algebraic equations by means of expansion of boundary bases and using the eigenfunctions of a fictitious regular boundary as weighting functions, which corresponds to less algebraic equations than BEM and simpler coefficients than the modified BEM. The numerical results for some typical metallic waveguides are given by using the method of eigen-weighted boundary integral equation, and they are exact enough with fast convergence.

Key words [Boundary integral method](#) [Metallic waveguide](#) [Eigenvalue problem](#) [Cutoff wavenumber](#)

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