Abstracts

Finite Element Techniques for the Solution of Poisson's Equation

A. Wexler and D.J. Richards. "Finite Element Techniques for the Solution of Poisson's Equation." 1971 G-MTT International Microwave Symposium Digest of Technical Papers 71.1 (1971 [MWSYM]): 132-133.

This paper describes a number of improvements to the finite-element method. The functional, whose extremum is furnished by the solution of Poisson's equation over the union of a number of piecewise homogeneous regions, is presented. The Rayleigh-Ritz method, using a two variable power series as a trial function, is employed to find an approximation to the solution. It is shown that Cauchy and Neumann boundary conditions are natural ones for the functional and that the interface condition of continuity of normal flux is satisfied naturally as well. The method of formulating the Dirichlet boundary condition, as a natural one, is described. The paper shows that a curved boundary need not be approximated by triangle sides but may be defined as accurately as desired.

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