Abstracts

Variational Formulation of the Dirichlet Boundary Condition

T.G. Hazel and A. Wexler. "Variational Formulation of the Dirichlet Boundary Condition." 1972 Transactions on Microwave Theory and Techniques 20.6 (Jun. 1972 [T-MTT]): 385-390.

The functional whose stationary point is furnished by the solution of Poisson's equation under mixed, Neumann, and Dirichlet boundary conditions within a homogeneous region is presented. The Dirichlet condition is formulated as a natural one, thus removing a considerable restriction on acceptable trial functions. Although the approach has been suggested previously, examples of its application to partial differential equations are unavailable. The practical significance of the method and its algorithmic simplicity is illustrated by means of tests on a square region. The natural Dirichlet condition is seen to be satisfied as well as the natural Neumann boundary condition. The equivalent functional for the Helmholtz eigenvalue problem is stated.

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