

**Golovach, G. P.**

**A method for the reduction of differential problems to integral equations.** (Russian)

Zbl 0706.65114

Vychisl. Prikl. Mat., Kiev 62, 8-14 (1987).

Summary: Given a differential problem in an arbitrary region. It is suggested to solve a different problem instead with the same differential operator but in a canonical region. Its solution can be written down easily or at least simply be formulated in terms of a function that is unknown on the surface of the canonical region. Boundary conditions of the initial problem are exploited to derive this unknown function and this results in an integral equation. Several typical problems of mathematical physics serve as an example.

**MSC:**

**65N35** Spectral, collocation and related methods for boundary value problems involving PDEs

Cited in 1 Review

**65R20** Numerical methods for integral equations

**35J05** Laplace operator, Helmholtz equation (reduced wave equation), Poisson equation

**35C15** Integral representations of solutions to PDEs

**45E10** Integral equations of the convolution type (Abel, Picard, Toeplitz and Wiener-Hopf type)

**Keywords:**

Laplace equation; integral equation method; canonical region