Rayleigh-Ritz approach for solving Fredholm integral equations with symmetric kernels

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Abstract

In this paper we use Rayleigh-Ritz approach to solve Fredholm Integral Equations (FIE) with symmetric kernels. Consider the following FIE with symmetric kernel

$$u(x) - \int_a^b k(x,t)u(t)dt = f(x) \qquad (1)$$

Where $k(x,t) = k(t,x)$ Using Rayleigh-Ritz method to solve (1) , a system of linear equations will obtain, and the solution of this system is the approximate solution for (1).