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The authors discuss the Legendre wavelet approach for approximating the solution of Fredholm integral equations of the first kind. The continuous Legendre wavelets constructed on $[0, 1]$ are utilized as a basis in the Galerkin method to reduce the solution of linear integral equations to a system of algebraic equations. For solving this system, the author uses the conjugate gradient method. Furthermore, the authors discuss a convergence analysis and error estimation for this method. Finally, the authors give some numerical examples for showing the efficiency of this method.

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MSC:
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65T60 Numerical methods for wavelets
45B05 Fredholm integral equations

Keywords:
Fredholm integral equations of the first kind; Legendre wavelets; Galerkin method; conjugate gradient method; convergence; error estimation; numerical examples

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