Stable difference scheme for the solution of an elliptic equation with the involution

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Abstract: The theory of functional-differential equations with the involution has received less attention than functional-differential equations. Moreover, one of the unstudied areas of differential equations are partial differential and difference equations with the involution (see, e.g., [1]- [3] and the references given therein).

In the paper [4], the boundary value problem of an elliptic equation with the involution and nonlocal boundary conditions in x was investigated. The stability and coercive stability estimates in Hölder norms in t for the solution of this problem were established. In the present paper a stable difference scheme for the approximate solution of an elliptic equation with the involution is constructed. Theorem on stability and almost coercive stability and coercive stability of this difference scheme is established. The theoretical statements for the solution of this difference scheme are supported by the results of the numerical experiment.

Keywords: Difference scheme, Elliptic equation with the involution, Stability estimates

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