Higher order of accuracy difference scheme for the inverse

elliptic problem with dirichlet condition

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Abstract: In this study, we consider inverse problem with overdeterminated Dirichlet condition for the elliptic differential equations in a Hilbert space H with self-adjoint positive definite operator A. Fourth order of accuracy stable difference scheme for the solution this problem is presented. The well-posedness of difference scheme in difference analogue of Hölder spaces is established. In applications, the stability and coercivity stability estmates are obtained. Resuts of numerical experiments for twodimensional case are presented in order to verify theotetical statements.

Keywords: Difference scheme, inverse elliptic equations, well-posedness; stability, coercive stability