

## NONLOCAL BOUNDARY VALUE PROBLEMS FOR SOBOLEV-TYPE FRACTIONAL EQUATIONS AND GRID METHODS FOR SOLVING THEM

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We consider nonlocal boundary value problems for a Sobolev-type equation with variable coefficients with fractional Gerasimov–Caputo derivative. The main result of the article consists in proving a priori estimates for solutions to nonlocal boundary value problems both in differential and difference form obtained under the assumption of the existence of a solution  $u(x, t)$  in a class of sufficiently smooth functions. These inequalities imply the uniqueness and stability of a solution with respect to the initial data and right-hand side and also the convergence of the solution to the difference problem to the solution to the differential problem.

*Key words and phrases:* nonlocal boundary value problem, a priori estimate, Sobolev-type equation, fractional-order differential equation, Gerasimov–Caputo fractional derivative.

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