COMPUTATIONAL MODEL FOR A DIFFERENTIAL EQUATION WITH APPROXIMATE INITIAL DATA BASED ON THE VOLTERRA INTEGRAL EQUATION OF THE SECOND KIND

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In mathematical models of physical phenomena that use the results of experiments, it is often necessary to solve differential equations. Such problems belong to the class of incorrect mathematical problems. In this paper, to obtain an approximate solution of a first-order differential equation with certain boundary conditions, the corresponding regularizing algorithm is constructed. A method is implemented that consists in constructing a Volterra integral equation of the second kind equivalent to the original differential equation. For its numerical solution, we present a computational algorithm that allows us to obtain stable solutions to an ill-posed problem.

Keywords: differential equation, Volterra integral equation of the second kind, iterative computational scheme, computational algorithm.

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