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## EXACT SOLUTIONS OF AN INVERSE OPTIMAL STABILIZATION PROBLEM FOR SYSTEMS WITH AFTEREFFECT OF NEUTRAL TYPE

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An optimal stabilization problem is considered for systems of differential equations with aftereffect of neutral type. To simplify the representation of a continuous quadratic functional, an isomorphism of functional spaces is used. The optimal stabilization problem is formulated in a functional space of states with a special metric. A statement of the inverse optimal stabilization problem is presented; this statement is related to the recovery of a system with a given representation of an optimal stabilizing control. Sufficient conditions for the solvability of the inverse problem are obtained, and conditions under which the inverse problem admits analytical solutions are specified. A method for finding exact solutions to this problem is proposed. For systems of differential equations with delay-type aftereffect, exact solutions of the inverse problem were obtained earlier. An example of the exact solution of the inverse problem is given for a system of differential equations with aftereffect of neutral type.

Keywords: differential equations with aftereffect of neutral type, optimal stabilization, Riccati equation.

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