EXTREMAL SHIFT IN A PROBLEM OF TRACKING A SOLUTION OF AN OPERATOR DIFFERENTIAL EQUATION

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A control problem for an operator differential equation in a Hilbert space is considered. The problem consists in constructing an algorithm generating a feedback control and guaranteeing that the solution of the equation follows a solution of another equation, which is subject to an unknown disturbance. We assume that both equations are given on an infinite time interval and the unknown disturbance is an element of a space of functions integrable with the square of their Euclidean norm; i.e., the perturbation may be unbounded. We construct two algorithms based on elements of the theory of ill-posed problems and the extremal shift method known in the theory of positional differential games. The algorithms are stable with respect to information noise and calculation errors. The first and second algorithms can be used in the cases of continuous and discrete measurement of solutions, respectively.

Keywords: control, tracking problem, distributed equations.

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