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**CONTROL WITH A GUIDE IN THE GUARANTEE OPTIMIZATION PROBLEM  
UNDER FUNCTIONAL CONSTRAINTS ON THE DISTURBANCE****M. I. Gomoyunov, D. A. Serkov**

A motion control problem for a dynamic system under disturbances is considered on a finite time interval. There are compact geometric constraints on the values of the control and disturbance. The equilibrium condition in the small game is not assumed. The aim of the control is to minimize a given terminal quality index. The guaranteed result optimization problem is posed in the context of the game-theoretical approach. In the case when realizations of the disturbance belong to some a priori unknown compact subset of  $L_1$  (the space of functions that are Lebesgue summable with the norm), we propose a new discrete-time control procedure with a guide. The proximity between the motions of the system and the guide is provided by the dynamic reconstruction of the disturbance. The quality of the control process is achieved by using an optimal counter-strategy in the guide. Conditions on the equations of motion under which this procedure ensures an optimal guaranteed result in the class of quasi-strategies are given. The scheme of the proof makes it possible to estimate the deviation of the realized value of the quality index from the value of the optimal result depending on the discretization parameter. Illustrative examples are given.

Keywords: guarantee optimization, functional constraints, quasi-strategies, control with a guide.

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*Mihail Igorevich Gomoyunov*, Cand. Sci. (Phys.-Math.), Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia; Ural Federal University named after B. N. Yeltsin, Yekaterinburg, 620002 Russia, e-mail: m.i.gomoyunov@gmail.com.

*Dmitrii Aleksandrovich Serkov*, Dr. Phys.-Math. Sci., Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia; Ural Federal University named after B. N. Yeltsin, Yekaterinburg, 620002 Russia, e-mail: serkov@imm.uran.ru .

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