

MSC: 91A23, 91A24, 91A80

DOI: 10.21538/0134-4889-2019-25-3-265-278

ON A CONTROL PROBLEM UNDER A DISTURBANCE AND A POSSIBLE BREAKDOWN

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A linear control problem is considered in the presence of an uncontrolled disturbance. It is only known that the values of the disturbance belong to a given connected compact set. The terminal time of the control process is fixed. The terminal component of the payoff depends on the modulus of a linear function of the phase variables, and the integral component is given by an integral of a power of the control. We admit the possibility of one breakdown leading to a change in the dynamics of the control process. The time of the breakdown is not known in advance. The construction of the control is based on the principle of minimizing the guaranteed result. The opponents are the disturbance and the time of the breakdown. Necessary and sufficient conditions for the optimality of an admissible control are found.

Keywords: control, disturbance, breakdown.

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Received May 21, 2019

Revised July 1, 2019

Accepted July 8, 2019

Funding Agency: This work was supported by the Russian Science Foundation (project no. 19-11-00105).

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Cite this article as: V.I.Ukhobotov. On a control problem under a disturbance and a possible breakdown, *Trudy Instituta Matematiki i Mekhaniki URO RAN*, 2019, vol. 25, no. 3, pp. 265–278.