ON THE ROBUSTNESS PROPERTY OF A CONTROL SYSTEM DESCRIBED BY AN URYSOHN TYPE INTEGRAL EQUATION

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In this paper a control system described by an Urysohn type integral equation with an integral constraint on the control functions is studied. It is assumed that the system is nonlinear with respect to the state vector and is affine with respect to the control vector. The control functions are chosen from a closed ball of the space L_p $(p > 1)$ with radius r. It is proved that the set of trajectories of the control system generated by all admissible control functions is Lipschitz continuous with respect to r and is continuous with respect to p as a set valued map. It is shown that the system's trajectory is robust with respect to the full consumption of the remaining control resource and every trajectory can be approximated by a trajectory generated by the control function with full control resource consumption.

Keywords: integral equation, control system, integral constraint, set of trajectories, robustness.

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