

Synthesis of algorithms for optimal digital control of an active vibration protection platform

Rybak Larisa, Gaponenko Elena

*Belgorod State Technological University named after V. G. Shukhov
Kostyukov str. 46, 308012 Belgorod, Russia
rl_bgtu@intbel.ru*

Abstract

The article deals with the problem of constructing an optimal controller of an active vibration protection system under the action of low-frequency disturbances from the moving base. The relative movement of the object and the base, the accelerations of the object and the base are used as feedbacks. The problem is solved in a discrete domain, the controller is synthesized as multiply connected. The feedback coefficients of the stabilizing controller are obtained on the basis of the solution of the discrete Riccati equation. As a criterion of quality, the integral of the quadratic forms of control variables and control action is used. The possibility of using the observer of the system state to obtain an estimate of the absolute velocity of the object is considered. The observer works on a closed basis. The results of simulation modeling under the action of harmonic oscillations and "white noise" are presented. The results of the observer's work are presented.