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STABILITY MARGIN OF OPTIMIZATION SYSTEM OF ROTARY ROCKET MOTION

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The research purpose is to make a quantitative assessment of the stability margin on the planes of characteristic polynomial roots, the two coefficients of the control law and amplitude-phase-frequency characteristic of the open-loop system using the numerical-analytical method. A control object is a rotary motion of a rocket as a rigid body in the plane considering inertia of autostabilizer but without a disturbed motion of the center of mass. The result of the research involves the seven assessments of the stability margin due to the coefficients of the motion equations and the control law. The research novelty consists in the fact that the control law includes summands proportional to all accountable state variables, in particular to angle and an angular velocity of the steering gear. Practical value of the results resides in the fact that the design takes in account the alternative quantitative assessments of the stability margin that is one of the basic requirements for the stabilization system.

Keywords: *control law, rotary motion, assessment of stability margin.*

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