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ASSESSMENT OF EFFECTS OF STRUCTURAL RIGIDITY OF LIQUID ROCKET-ENGINE CHAMBER ON CHARACTERISTICS OF THRUST-VECTOR CONTROL

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The effects of structural rigidity of the liquid rocket engine chamber with a high-expansion nozzle on the characteristics of the thrust-vector control are assessed. A simplified mathematical model is developed. For the model developed the effects of the amplitude-frequency characteristics of the swinging combustion chamber of an engine are estimated under forced harmonic vibrations. It is shown that the chamber of combustion under consideration can appear as a reasonably rigid chamber without inducing a significant interference for thrust vector control at swinging frequency of 10 Hz or less. However, there is a possibility of a significant effect of rigidity of the swinging drive and that of the outlet of an uncooled section mouth for the engine nozzle on the above process.

Keywords: *liquid rocket engine, combustion chamber, swinging, thrust-vector control, structural rigidity.*

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