

ON AN OPTIMAL ORBIT TRANSFER IN A NORMAL GRAVITATIONAL FIELD

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We consider an optimal control problem for a nonlinear dynamic system describing the motion of a special-purpose spacecraft in a normal gravitational field. The spacecraft is designed for transporting a payload from a near-Earth elliptic orbit to a higher target orbit. The required control must satisfy a number of constraints and provide the transfer of a maximum-weight payload to a given target orbit under some requirements on the current phase state of the system. We propose approaches to the solution of this problem and present results of numerical simulation.

Keywords: orbit transfer, optimal control, finite thrust, payload, state constraints.

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