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Section:

17. Control Theory and Optimization

1991 MS Classification: 34, 93
Aipanov, Shamsha A. ,Kazakh State University, Kazakhstan
The solutions of some problems of optimal control of spacecraft
An analytical method of solving the problem of optimal control of linear nonstationary systems with quadratic functional and fixed endpoints of trajectories is proposed. The two-point boundary problem is reduced to the Caushy's problem with use of some constant matrices which are independent of initial and finite system states. The numerical algorithm of solving nonlinear problems of optimal control is developed on the base of this method. In particular, the problem of spacecraft descend in the Martian atmosphere (the problem of soft landing with minimum fuel expenditure to the preassigned point of planet surface) is solved.
Reference: Sh. A. Aipanov, Z. N. Murzabekov, The solutions of a linear-quadratic optimal control problem for fixed endpoints of system trajectories, *Differential equations,* **32** (1996), 848–849.