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NECESSARY OPTIMALITY CONDITIONS OF FIRST AND SECOND ORDER FOR SYSTEMS WITH BOUNDARY CONDITIONS

Abstract

We consider an optimal control problem wherein the state of a system is determined from controlled system of ordinary differential equations with two-point boundary conditions. Admissible controls are chosen from a class of bounded and measurable functions. Validity of the Pontryagin's maximum principle is proved for the investigated class of problems. Increment formula of the second order functional is calculated. On the base of the needle-shaped variations control we get necessary optimality conditions for singular controls in the sense of the Pontryagin's maximum principle.