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Linear-quadratic optimization and some general hypotheses on optimal control. (English)

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Summary: Necessary and sufficient conditions for existence of optimal control for all initial data are proved for an LQ-optimization problem. If these conditions are fulfilled, necessary and sufficient conditions of optimality are formulated. Basing on the results, some general hypotheses on optimal control in terms of Pontryagin's maximum principle and Bellman's equation are proposed.

MSC:

[49N10](#) Linear-quadratic optimal control problems

[49K15](#) Optimality conditions for problems involving ordinary differential equations

[49L20](#) Dynamic programming in optimal control and differential games

Keywords:

optimal control; LQ-optimization; necessary and sufficient conditions of optimality; Pontryagin's maximum principle; Bellman's equation

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