

**Boltyanskii, V. G.**

**Sufficient conditions for optimality and the justification of the dynamic programming method.** (English. Russian original) [Zbl 0143.32004](#)  
*SIAM J. Control* 4, 326-362 (1966).

Translation from *Izv. Akad. Nauk SSSR, Ser. Mat.* 28, 481–514 (1964; [Zbl 0132.34402](#)).

Summary: The paper contains a detailed presentation of results which were published earlier in brief in [*Sov. Math., Dokl.* 2, 1288–1291 (1961); translation from *Dokl. Akad. Nauk SSSR* 140, 994–997 (1961; [Zbl 0105.07803](#))]. The problem of the optimal control of a plant described by ordinary differential equations is considered. Sufficient optimality conditions are derived, one of which essentially gives a correct foundation to the dynamic programming method (for the class of problems being studied), while the other shows that under the condition of existence of regular synthesis the maximum principle is not only a necessary but also a sufficient optimality condition. Examples of the synthesis of nonlinear second-order systems are given.

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**MSC:**

[49K99](#) Optimality conditions

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

Cited in **1** Review  
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**Keywords:**

sufficient conditions for optimality; dynamic programming method

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