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Sufficient optimality conditions for a bang-bang trajectory in a Bolza problem. (English)

[Zbl 1191.49021](#)

Sarychev, Andrey (ed.) et al., Mathematical control theory and finance. Proceedings of the workshop, Lisbon, April 10–14, 2007. Berlin: Springer (ISBN 978-3-540-69531-8/hbk). 337-357 (2008).

Summary: This paper gives sufficient conditions for a class of bang-bang extremals with multiple switches to be locally optimal in the strong topology. The conditions are the natural generalizations of the ones considered in [*A. A. Agrachev, G. Stefani and P. Zezza*, SIAM J. Control Optimization 41, No. 4, 991–1014 (2002; [Zbl 1020.49021](#)); *L. Poggiolini*, Rend. Semin. Mat., Univ. Politec. Torino 64, No. 1, 1–23 (2006; [Zbl 1169.49019](#)); *L. Poggiolini and G. Stefani*, Syst. Control Lett. 53, No. 3–4, 269–279 (2004; [Zbl 1157.49305](#))]. We require both the strict bang-bang Legendre condition, a nondegeneracy condition at multiple switching times, and the second-order conditions for the finite-dimensional problems obtained by moving the switching times of the reference trajectory.

For the entire collection see [[Zbl 1143.91005](#)].

MSC:

- [49K15](#) Optimality conditions for problems involving ordinary differential equations
- [49K30](#) Optimality conditions for solutions belonging to restricted classes (Lipschitz controls, bang-bang controls, etc.)

Cited in 5 Documents

Keywords:

bang-bang extremals; strong topology; strict bang-bang Legendre condition

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