

Trélat, E.**Singular trajectories and subanalyticity in optimal control and Hamilton-Jacobi theory.**(English) [Zbl 1168.49308](#)

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Summary: This survey paper presents several works of the author in optimal control theory, mainly *E. Trélat* [J. Dyn. Control Syst. 6, No. 4, 511–541 (2000; [Zbl 0964.49021](#))]; *Y. Chitour, F. Jean* and *E. Trélat* [J. Differ. Geom. 73, No. 1, 45–73 (2006; [Zbl 1102.53019](#))]; *E. Trélat* [Ann. Inst. Henri Poincaré, Anal. Non Linéaire 23, No. 3, 363–387 (2006; [Zbl 1094.35020](#))]. Under some general assumptions on an analytic optimal control problem, and assuming the absence of singular minimizing trajectories, the value function associated to this problem happens to be subanalytic. In the case of multi-inputs control-affine systems, generically there does not exist any singular minimizer. An application to the Hamilton-Jacobi theory is then presented, where the Hamiltonian is associated to an optimal control problem; namely, if the data are analytic then the unique viscosity solution is subanalytic.

MSC:[49L20](#) Dynamic programming in optimal control and differential games[93B29](#) Differential-geometric methods in systems theory (MSC2000)Cited in **1** Document**Full Text:** [EuDML](#)