WELL-POSEDNESS AND POROSITY IN OPTIMAL CONTROL WITHOUT CONVEXITY ASSUMPTIONS

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Abstract

The Tonelli existence theorem in the calculus of variations and its subsequent modifications were established for integrands f which satisfy convexity and growth conditions. In Zaslavski [Nonlinear Analysis, 43 (2001), pp. 339-361] we considered a class of optimal control problems which is identified with the corresponding complete metric space of integrands, say $\mathcal{F}$. We did not impose any convexity assumptions. The main result in Zaslavski [Nonlinear Analysis, 43 (2001), pp. 339-361] establishes that for a generic integrand $f \in \mathcal{F}$ the corresponding optimal control problem is well-posed. In this talk we consider the set of all integrands $f \in \mathcal{F}$ for which the corresponding optimal control problem is well-posed. We show that the complement of this set is not only of the first category but also a σ-porous set.

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