

On the Small-time Local Controllability

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Abstract

This talk is devoted to the study of the so-called small-time local controllability (STLC) property of nonlinear control systems. It provides an overview of some fundamental results in the theory, together with several recent developments in the field. Particular attention is devoted to classes of nonlinear control systems for which necessary and sufficient conditions for small-time local controllability have been established.

The approach presented is based on a suitable definition of tangent vector fields to the reachable set of a control system and makes essential use of the Baker-Campbell-Hausdorff formula from Lie group theory. This framework provides a unified perspective on several classical controllability criteria for small-time local controllability.