

Gauthier, J. P.; Bornard, G.

Existence and uniqueness of minimal realizations for a class of C^∞ systems. (English)

[Zbl 0591.93013](#)

[SIAM J. Control Optimization](#) 22, 666-670 (1984).

This work considers the differential geometry approach for nonlinear control theory. In particular, the authors extend to the noncompact case some results due to *H. J. Sussmann* [see *Math. Syst. Theory* 10, 263- 284 (1977); *J. Differ. Geom.* 10, 151-166 (1975; [Zbl 0342.58004](#)); *Bull. Am. Math. Soc.* 80, 573-575 (1974; [Zbl 0301.58002](#))] in the analytic and symmetric cases and to themselves [see *Syst. Control Lett.* 1, 395-398 (1982; [Zbl 0497.93014](#))] in the compact case. For the nonlinear control theory point of view this enables to state the existence and uniqueness of minimal realizations for a class of C^∞ completely controllable and weakly observable systems.

Reviewer: [D.Normand-Cyrot](#)

MSC:

- [93B20](#) Minimal systems representations
- [57R27](#) Controllability of vector fields on C^∞ and real-analytic manifolds
- [93C10](#) Nonlinear systems in control theory
- [55Q05](#) Homotopy groups, general; sets of homotopy classes
- [37-XX](#) Dynamical systems and ergodic theory

Cited in **3** Documents

Keywords:

differential geometry approach; nonlinear control; minimal realizations

Full Text: [DOI](#)