

**Gauthier, J. P.; Bornard, G.**

**Existence and uniqueness of minimal realizations for a class of  $C^\infty$  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  $C^\infty$  completely controllable and weakly observable systems.

Reviewer: D.Normand-Cyrot

**MSC:**

- 93B20 Minimal systems representations
- 57R27 Controllability of vector fields on  $C^\infty$  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

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