短文

对称非线性控制系统的串级解耦标准形

赵军,井元伟,张嗣瀛

东北大学自控系,沈阳

摘要
证明了具有对称性的非线性控制系统存在局部的串级解耦标准形. 这种标准形由一个维数等于系统维数与对称性Lie群维数之差的独立子系统和一个不含控制量的子系统串联而成. 利用对称性和微分几何方法可将这种标准形构造出来.
关键词　　对称性　标准形　非线性系统
分类号

A Normal Form With Cascade Decomposition of Symmetric Nonlinear Control Systems

Zhao Jun,Jing Yuanwei,Zhang Siying

Department of Automatic Control,Northeastern University,Shenyang

Abstract
It is shown that a nonlinear control system possessing symmetries has locally a normal form with cascade decomposition. This normal form consists of two subsystems. One is a independent subsystem of the dimension equal to the difference of the dimensions between the total system and the symmetry Lie group. The other is a subsystem without controls. Using differential geometric method and choosing properly a few symmetric functions of coordinate transformation whose Lie derivatives with respect to input vector fields all vanish, we can construct the normal form.

Key words　 Symmetries　normal form　nonlinear systems

DOI :