

Jerbi, Hamadi

On the stabilizability of some classes of bilinear systems in \mathbb{R}^3 . (English) Zbl 1265.93201
Kybernetika 38, No. 4, 457-468 (2002).

Summary: In this paper we consider some classes of bilinear systems. We give sufficient condition for the asymptotic stabilization by using a positive and a negative feedbacks.

MSC:

93D15 Stabilization of systems by feedback

93C10 Nonlinear systems in control theory

Keywords:

bilinear system; stabilization by feedback

Full Text: [Link](#)

References:

- [1] Andriano V.: Some results on global and semi global stabilization of affines systems. Systems Control Lett. 33 (1998), 259-263 · [Zbl 0902.93053](#) · [doi:10.1016/S0167-6911\(97\)00074-1](#)
- [2] Cima A., Llibre J.: Algebraic and topological classification of the homogeneous cubic vector field in the plane. J. Math. Anal. Appl. 14 (1990), 420-448 · [Zbl 0711.34061](#) · [doi:10.1016/0022-247X\(90\)90359-N](#)
- [3] Čelikovský S.: On the stabilization of the homogeneous bilinear systems. Systems Control Lett. 21 (1993), 503-510 · [Zbl 0794.93089](#) · [doi:10.1016/0167-6911\(93\)90055-B](#)
- [4] Chabour R., Sallet, G., Vivalda J. C.: Stabilization of nonlinear two dimensional system: a bilinear approach. Mathematics of Control, Signals and Systems (1996), 224-246 · [Zbl 0797.93038](#) · [doi:10.1007/BF01211621](#)
- [5] Chabour O., Vivalda J. C.: Remark on local and global stabilization of homogeneous bilinear systems. Systems Control Lett. 41 (2000), 141-143 · [Zbl 0985.93047](#) · [doi:10.1016/S0167-6911\(00\)00045-1](#)
- [6] Gauthier J. P., Kupka I.: A separation principle for bilinear systems with dissipative drift. IEEE Trans. Automat. Control AC-37 (1992), 12, 1970-1974 · [Zbl 0778.93102](#) · [doi:10.1109/9.182484](#)
- [7] Hahn W.: Stability of Motion. Springer Verlag, Berlin 1967 · [Zbl 0189.38503](#)
- [8] Hammouri H., Marques J. C.: Stabilization of homogeneous bilinear systems. Appl. Math. Lett. 7 (1994), 1, 23-28 · [Zbl 0797.93039](#) · [doi:10.1016/0893-9659\(94\)90047-7](#)
- [9] Iggider A., Kalitine, B., Outbib R.: Semidefinite Lyapunov Functions Stability and Stabilization. (Mathematics of Control, Signals, and Systems 9.) Springer-Verlag, London 1996, pp. 95-106 · [Zbl 0868.93048](#) · [doi:10.1007/BF01211748](#)
- [10] Iggider A., Kalitine, B., Sallet G.: Lyapunov theorem with semidefinite functions proceedings. Proc. 14th Triennial IFAC World Congress IFAC 99, Beijing 1999, pp. 231-236
- [11] Jerbi H., Hammami M. A. C. Vivalda J.: On the stabilization of homogeneous affine systems. Proc. 2nd IEEE Mediterranean Symposium on New Directions in Control & Automation T2.3.4, 1994, pp. 319-326
- [12] Jurdjevic V., Quinn J. P.: Controllability and stability. J. of Differentials 28 (1978), 381-389 · [Zbl 0417.93012](#) · [doi:10.1016/0022-0396\(78\)90135-3](#)
- [13] Ryan E. P., Buckingham N. J.: On asymptotically stabilizing feedback control of bilinear systems. IEEE Trans. Automat. Control AC-28 (1983), 8, 863-864 · [Zbl 0535.93050](#) · [doi:10.1109/TAC.1983.1103323](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.