分段线性系统动力学的非光滑分析

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摘要　　分析了分段线性系统的非光滑向量场对Ｐｏｉｎｃａｒｅ映射可微性的影响以及由此产生的复杂动力学行为．研究表明：当周期运动接近鞍结及其退化分叉或以很低速度穿过两线性区的切换面时，这类系统的动力学行为显著有别于具有光滑向量场的系统

关键词　　分段线性系统　非光滑分析　分叉　解支延续

分类号

NONSMOOTH ANALYSIS OF DYNAMICS OF A PIECEWISE LINEAR SYSTEM

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Abstract

Begins with analyzing the effect of nonsmooth vector field of a piecewise-linear system on the differentiability of the Poincare mapping, then, presents the dynamics complexity of the system through numerical simulations. The study shows that the system differs greatly in dynamics from a system with smooth vector field, when its periodic motion approaches a bifurcation of saddle-node(or relevant degenerated)type or penetrates a switching plane between two linear regions at very low velocity.

Key words　piecewise-linear system　nonsmooth analysis　bifurcation　solution continuation

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