



Two Limit Cycles in Liénard Piecewise Linear Differential Systems

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Abstract

Some techniques for studying the existence of limit cycles for smooth differential systems are extended to continuous piecewise linear differential systems. Rigorous new results are provided on the existence of two limit cycles surrounding the equilibrium point at the origin for systems with three zones separated by two parallel straight lines without symmetry. As a relevant application, it is shown the existence of bistable regimes in an asymmetric memristor-based electronic oscillator.

Keywords Nonlinear control systems · Periodic orbits · Limit cycles · Liénard piecewise linear differential systems

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