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2.7 Various types of dynamical systems2.7.1 Linear and nonlinear dynamical systems; 2.7.2 Homogeneous dynamical systems; 2.7.3 Polynomial dynamical systems; 2.7.4 Singularly perturbed systems; 2.7.5 Slow-Fast dynamical systems; 2.8 Two-dimensional dynamical systems; 2.8.1 Poincare index; 2.8.2 Poincare contact theory; 2.8.3 Poincare limit cycle; 2.8.4 Poincare-Bendixson Theorem; 2.9 High-dimensional dynamical systems; 2.9.1 Attractors; 2.9.2 Strange attractors; 2.9.3 First integrals and Lie derivative; 2.10 Hamiltonian and integrable systems; 2.10.1 Hamiltonian dynamical systems

Sommario/riassunto

This book aims to present a new approach called Flow Curvature Method that applies Differential Geometry to Dynamical Systems. Hence, for a trajectory curve, an integral of any n-dimensional dynamical system as a curve in Euclidean n-space, the curvature of the trajectory - or the flow - may be analytically computed. Then, the location of the points where the curvature of the flow vanishes defines a manifold called flow curvature manifold. Such a manifold being defined from the time derivatives of the velocity vector field, contains information about the dynamics of the system, hence identifyi