

图书基本信息

书名：<<常微分方程理论中的几何方法 第2版>>

13位ISBN编号：9787506271929

10位ISBN编号：7506271923

出版时间：2004-11

出版公司：世界图书出版公司

作者：V.I.ARNOLD

页数：351

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

内容概要

Newton's fundamental discovery, the one which he considered necessary to keep secret and published only in the form of an anagram, consists of the following: *Data aequatione quocunque fluentes quantitates involvente fluxiones invenire et vice versa*. In contemporary mathematical language, this means: "It is useful to solve differential equations". At present, the theory of differential equations represents a vast conglomerate of a great many ideas and methods of different nature, very useful for many applications and constantly stimulating theoretical investigations in all areas of mathematics. Many of the routes connecting abstract mathematical theories to applications in the natural sciences lead through differential equations. Many topics of the theory of differential equations grew so much that they became disciplines in themselves; problems from the theory of differential equations had great significance in the origins of such disciplines as linear algebra, the theory of Lie groups, functional analysis, quantum mechanics, etc. Consequently, differential equations lie at the basis of scientific mathematical philosophy (*Weltanschauung*).

书籍目录

Preface to the Second Edition Preface to the First Edition Notation Chapter 1 Special Equations 1 Differential Equations Invariant under Groups of Symmetries 2 Resolution of Singularities of Differential Equations 3 Implicit Equations 4 Normal Form of an Implicit Differential Equation in the Neighborhood of a Regular Point, Singular Point 5 The Stationary Schrödinger Equation 6 Geometry of a Second-Order Differential Equation and Geometry of a Pair of Direction Fields in Three-Dimensional Space Chapter 2 First-Order Partial Differential Equations 7 Linear and Quasilinear First-Order Partial Differential Equations 8 The Nonlinear First-Order Partial Differential Equation 9 A Theorem of Frobenius Chapter 3 Structural Stability 10 The Notion of Structural Stability 11 Differential Equation on the Torus 12 Analytic Reduction of Analytic Circle Diffeomorphisms to a Translation 13 Introduction to the Hyperbolic Theory 14 Anosov Systems 15 Structurally Stable Systems Are Not Everywhere Dense Chapter 4 Perturbation Theory 16 The Averaging Method 17 Averaging in Single-Frequency Systems 18 Averaging in Systems with Several Frequencies 19 Averaging in Hamiltonian Systems 20 Averaging Invariants 21 Averaging in Seifert's Foliation Chapter 5 Normal Forms 22 Formal Reduction to Linear Normal Forms 23 The Case of Resonance 24 Poincaré and Siegel Domains 25 Normal Form of a Mapping in the Neighborhood of a Fixed Point 26 Normal Form of an Equation with Periodic Coefficients 27 Normal Form of the Neighborhood of an Elliptic Curve 28 Proof of Siegel's Theorem Chapter 6 Local Bifurcation Theory 29 Families and Deformations 30 Matrices Depending on Parameters and Singularities of the Bifurcation Diagram 31 Bifurcation of Singular Points of a Vector Field 32 Versal Deformation of Phase Portraits 33 Loss of Stability of an Equilibrium Position 34 Loss of Stability of Self-Sustained Oscillations 35 Versal Deformation of Equivariant Vector Fields on the Plane 36 Metamorphoses of the Topology at Resonances 37 Classification of Singular Points Samples of Examination Problems Index

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>