Lecture Notes in Mathematics

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Sergej B. Kuksin

Nearly Integrable Infinite-Dimensional Hamiltonian Systems

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Nearly Integrable Infinite Dimensional Hamiltonian Systems Lecture Notes In Mathematics

Jean Bourgain

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Progress in Nonlinear Analysis Gongqing Zhang,Yiming Long,2000 The real world is complicated as a result of which most mathematical models arising from mechanics physics chemistry and biology are nonlinear Based on the efforts of scientists in the 20th century especially in the last three decades topological variational geometrical and other methods have

developed rapidly in nonlinear analysis which made direct studies of nonlinear models possible in many cases and provided global information on nonlinear problems which was not available by the traditional linearization method This volume reflects that rapid development in many areas of nonlinear analysis Perturbation Theory Giuseppe Gaeta,2022-12-16 This volume in the Encyclopedia of Complexity and Systems Science Second Edition is devoted to the fundamentals of Perturbation Theory PT as well as key applications areas such as Classical and Quantum Mechanics Celestial Mechanics and Molecular Dynamics Less traditional fields of application such as Biological Evolution are also discussed Leading scientists in each area of the field provide a comprehensive picture of the landscape and the state of the art with the specific goal of combining mathematical rigor explicit computational methods and relevance to concrete applications New to this edition are chapters on Water Waves Rogue Waves Multiple Scales methods legged locomotion Condensed Matter among others while all other contributions have been revised and updated Coverage includes the theory of Poincare Birkhoff Normal Forms aspects of PT in specific mathematical settings Hamiltonian KAM theory Nekhoroshev theory and symmetric systems technical problems arising in PT with solutions convergence of series expansions diagrammatic methods parametric resonance systems with nilpotent real part PT for non smooth systems and on PT for PDEs write out this acronym partial differential equations Another group of papers is focused specifically on applications to Celestial Mechanics Quantum Mechanics and the related semiclassical PT Quantum Bifurcations Molecular Dynamics the so called choreographies in the N body problem as well as Evolutionary Theory Overall this unique volume serves to demonstrate the wide utility of PT while creating a foundation for innovations from a new generation of graduate students and professionals in Physics Mathematics Mechanics Engineering and the Biological Sciences KdV & KAM Thomas Kappeler,Jürgen Pöschel,2013-04-17 In this text the authors consider the Korteweg de Vries KdV equation ut uxxx 6uux with periodic boundary conditions Derived to describe long surface waves in a narrow and shallow channel this equation in fact models waves in homogeneous weakly nonlinear and weakly dispersive media in general Viewing the KdV equation as an infinite dimensional and in fact integrable Hamiltonian system we first construct action angle coordinates which turn out to be globally defined They make evident that all solutions of the periodic KdV equation are periodic quasi periodic or almost periodic in time Also their construction leads to some new results along the way Subsequently these coordinates allow us to apply a general KAM theorem for a class of integrable Hamiltonian pde s proving that large families of periodic and quasi periodic solutions persist under sufficiently small Hamiltonian perturbations The pertinent nondegeneracy conditions are verified by calculating the first few Birkhoff normal form terms an essentially elementary calculation First European Congress of Mathematics Paris, July 6–10, 1992 Anthony Joseph,Fulbert Mignot,Francois Murat,Bernard Prum,Rudolf Rentschler,1994-07 Table of Contents D Duffie Martingales Arbitrage and Portfolio Choice J Fr hlich Mathematical Aspects of the Quantum Hall Effect M Giaquinta Analytic and Geometric Aspects of Variational Problems for Vector Valued Mappings U Hamenst dt Harmonic Measures for Leafwise Elliptic Operators Along

Foliations M Kontsevich Feynman Diagrams and Low Dimensional Topology S B Kuksin KAM Theory for Partial Differential Equations M Laczkovich Paradoxical Decompositions A Survey of Recent Results J F Le Gall A Path Valued Markov Process and its Connections with Partial Differential Equations I Madsen The Cyclotomic Trace in Algebraic K Theory A S Merkurjev Algebraic K Theory and Galois Cohomology J Nekov r Values of L Functions and p Adic Cohomology Y A Neretin Mantles Trains and Representations of Infinite Dimensional Groups M A Nowak The Evolutionary Dynamics of HIV Infections R Piene On the Enumeration of Algebraic Curves from Circles to Instantons A Quarteroni Mathematical Aspects of Domain Decomposition Methods A Schrijver Paths in Graphs and Curves on Surfaces B Silverman Function Estimation and Functional Data Analysis V Strassen Algebra and Complexity P Tukia Generalizations of Fuchsian and Kleinian Groups C Viterbo Properties of Embedded Lagrange Manifolds D Voiculescu Alternative Entropies in Operator Algebras M Wodzicki Algebraic K Theory and Functional Analysis D Zagier Values of Zeta Functions and Their Applications *Discrete and Continuous Dynamical Systems* ,2007 **Encyclopedia of Mathematical Physics** Jean-Pierre Françoise,Gregory L. Naber,Sheung Tsun Tsou,2006 The Encyclopedia of Mathematical Physics provides a complete resource for researchers students and lecturers with an interest in mathematical physics It enables readers to access basic information on topics peripheral to their own areas to provide a repository of the core information in the area that can be used to refresh the researcher s own memory banks and aid teachers in directing students to entries relevant to their course work The Encyclopedia does contain information that has been distilled organised and presented as a complete reference tool to the user and a landmark to the body of knowledge that has accumulated in this domain It also is a stimulus for new researchers working in mathematical physics or in areas using the methods originating from work in mathematical physics by providing them with focused high quality background information Editorial Board Jean Pierre Fran oise Universit Pierre et Marie Curie Paris France Gregory L Naber Drexel University Philadelphia PA USA Tsou Sheung Tsun University of Oxford UK Also available online via ScienceDirect 2006 featuring extensive browsing searching and internal cross referencing between articles in the work plus dynamic linking to journal articles and abstract databases making navigation flexible and easy

Mathematical Reviews ,2002 *Nonlinearity* ,2007 *XIth International Congress of Mathematical Physics* Daniel Iagolnitzer,1995 Over 1000 mathematicians participated in the Paris International Conference on Mathematical Physics and its satellite conference on topology strings and integrable models This volume contains some of the highlights including topics such as conformable field theory and general relativity *European Congress of Mathematics* Antal Balog,1998

Russian Mathematical Surveys ,2006 Annals of Mathematics Studies Jean Bourgain,1940 **Stochastic and Spatial Structures of Dynamical Systems** Sebastian van Strien,Sjoerd M. Verduyn Lunel,1996 Paperback Recently great progress has been made in the field of dynamical systems Several new developments in dynamical systems are important or will become so in the near future The areas that are covered are close to the applications and related to noise randomness

and spatial structures This book comprises of articles by most of the speakers at the meeting and is divided into three parts I the effect of noise on data generated by dynamical systems and testing whether these dynamical systems adequately model reality II spatial structures which can be generated by dynamical systems and which act on a network of coupled systems coupled lattice maps III random differential equations and applications to biology **Proceedings of the International Congress of Mathematicians: Invited lectures** Gerd Fischer,Ulf Rehmann,1998 Nanjing da xue xue bao shu xue ban nian kan ,2007 **Atti Del ... Congresso Internazionale Dei Matematici ...** ,1998 **Reviews in Mathematics and Mathematical Physics** ,1995

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