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Nonlinear Equations for Beams and Degenerate Plates with Piers Maurizio Garrione 2019-10-31 This book develops a full theory for hinged beams and degenerate plates with multiple intermediate piers with the final purpose of understanding the stability of suspension bridges. New models are proposed and new tools are provided for the stability analysis. The book opens by deriving the PDE's based on the physical models and by introducing the basic framework for the linear stationary problem. The linear analysis, in particular the behavior of the eigenvalues as the position of the piers varies, enables the authors to tackle the stability issue for some nonlinear evolution beam equations, with the aim of determining the "best position" of the piers within the beam in order to maximize its stability. The study continues with the analysis of a class of degenerate plate models. The torsional instability of the structure is investigated, and again, the optimal position of the piers in terms of stability is discussed. The stability analysis is carried out by means of both analytical tools and numerical experiments. Several open problems and possible future developments are presented. The qualitative analysis provided in the book should be seen as the starting point for a precise quantitative study of more complete models, taking into account the action of aerodynamic forces. This book is intended for a two-fold audience. It is addressed both to mathematicians working in the field of Differential Equations, Nonlinear Analysis and Mathematical Physics, due to the rich number of challenging mathematical questions which are discussed and left as open problems, and to Engineers interested in mechanical structures, since it provides the theoretical basis to deal with models for the dynamics of suspension bridges with intermediate piers. More generally, it may be enjoyable for readers who are interested in the application of Mathematics to real life problems.

Issues in Logic, Operations, and Computational Mathematics and Geometry: 2013 Edition 2013-05-01 Issues in Logic, Operations, and Computational Mathematics

and Geometry: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Random Structures and Algorithms. The editors have built Issues in Logic, Operations, and Computational Mathematics and Geometry: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Random Structures and Algorithms in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Logic, Operations, and Computational Mathematics and Geometry: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

SIAM Journal on Control and Optimization **Society for Industrial and Applied Mathematics 1998**

Control and Estimation of Distributed Parameter Systems Gertrud Desch 1994 22 papers on control of nonlinear partial differential equations highlight the area from a broad variety of viewpoints. They comprise theoretical considerations such as optimality conditions, relaxation, or stabilizability theorems, as well as the development and evaluation of new algorithms. A significant part of the volume is devoted to applications in engineering, continuum mechanics and population biology.

Synchronization in Infinite-Dimensional Deterministic and Stochastic Systems Igor Chueshov 2020-07-29 The main goal of this book is to systematically address the mathematical methods that are applied in the study of synchronization of infinite-dimensional evolutionary dissipative or partially dissipative systems. It bases its unique monograph presentation on both general and abstract models and covers several important classes of coupled nonlinear deterministic and stochastic PDEs which generate infinite-dimensional dissipative systems. This text, which adapts readily to advanced graduate coursework in dissipative dynamics, requires some background knowledge in evolutionary equations and introductory functional analysis as well as a basic understanding of PDEs and the theory of random processes. Suitable for researchers in synchronization theory, the book is also relevant to physicists and engineers interested in both the mathematical background and the methods for the asymptotic analysis of coupled infinite-dimensional dissipative systems that arise in continuum mechanics.

Nonlinear Wave Equations Walter A. Strauss 1990-01-12 The theory of nonlinear wave equations in the absence of shocks began in the 1960s. Despite a great deal of recent activity in this area, some major issues remain unsolved, such as sharp conditions for the global existence of solutions with arbitrary initial data, and the global phase portrait in the presence of periodic solutions and traveling waves. This book, based on lectures presented by the author at George Mason University in January 1989, seeks to present the sharpest results to date in this area. The author surveys the fundamental qualitative properties of the solutions of nonlinear wave equations in the absence of boundaries and shocks. These

properties include the existence and regularity of global solutions, strong and weak singularities, asymptotic properties, scattering theory and stability of solitary waves. Wave equations of hyperbolic, Schrodinger, and KdV type are discussed, as well as the Yang-Mills and the Vlasov-Maxwell equations. The book offers readers a broad overview of the field and an understanding of the most recent developments, as well as the status of some important unsolved problems. Intended for mathematicians and physicists interested in nonlinear waves, this book would be suitable as the basis for an advanced graduate-level course.

Von Karman Evolution Equations Igor Chueshov 2010-04-08 In the study of mathematical models that arise in the context of concrete - plications, the following two questions are of fundamental importance: (i) we- posedness of the model, including existence and uniqueness of solutions; and (ii) qualitative properties of solutions. A positive answer to the ?rst question, - ing of prime interest on purely mathematical grounds, also provides an important test of the viability of the model as a description of a given physical phenomenon. An answer or insight to the second question provides a wealth of information about the model, hence about the process it describes. Of particular interest are questions related to long-time behavior of solutions. Such an evolution property cannot be v- i?ed empirically, thus any in a-priori information about the long-time asymptotics can be used in predicting an ultimate long-time response and dynamical behavior of solutions. In recent years, this set of investigations has attracted a great deal of attention. Consequent efforts have then resulted in the creation and infusion of new methods and new tools that have been responsible for carrying out a successful an- ysis of long-time behavior of several classes of nonlinear PDEs.

Long-Time Behavior of Second Order Evolution Equations with Nonlinear Damping Igor Chueshov 2008 The authors consider abstract nonlinear second order evolution equations with a nonlinear damping. Questions related to long time behavior, existence and structure of global attractors are studied. Particular emphasis is put on dynamics which--in addition to nonlinear dissipation-- have noncompact semilinear terms and whose energy may not be necessarily decreasing. For such systems the authors first develop a general theory at the abstract level. They then apply the general theory to nonlinear wave and plate equations exhibiting the aforementioned characteristics and are able to provide new results pertaining to several open problems in the area of structure and properties of global attractors arising in this class of PDE dynamics.

Attractors for Semigroups and Evolution Equations Olga A. Ladyzhenskaya 2022-06-30 Ladyzhenskaya's survey of her work on partial differential equations and dynamical systems, with a new technical introduction.

New Prospects in Direct, Inverse and Control Problems for Evolution Equations Angelo Favini 2014-11-27 This book, based on a selection of talks given at a dedicated meeting in Cortona, Italy, in June 2013, shows the high degree of interaction between a number of fields related to applied sciences. Applied sciences consider situations in which the evolution of a given system over time is observed, and the related models can be formulated in terms of evolution equations (EEs). These equations have been studied intensively in theoretical

research and are the source of an enormous number of applications. In this volume, particular attention is given to direct, inverse and control problems for EEs. The book provides an updated overview of the field, revealing its richness and vitality.

Well-Posed Linear Systems Olof Staffans 2005-02-24 Many infinite-dimensional linear systems can be modelled in a Hilbert space setting. Others, such as those dealing with heat transfer or population dynamics, need to be set more generally in Banach spaces. This is the first book dealing with well-posed infinite-dimensional linear systems with an input, a state, and an output in a Hilbert or Banach space setting. It is also the first to describe the class of non-well-posed systems induced by system nodes. The author shows how standard finite-dimensional results from systems theory can be extended to these more general classes of systems, and complements them with new results which have no finite-dimensional counterpart. Much of the material presented is original, and many results have never appeared in book form before. A comprehensive bibliography rounds off this work which will be indispensable to all working in systems theory, operator theory, delay equations and partial differential equations.

Mathematical Elasticity Philippe G. Ciarlet 2022-01-22 In this second book of a three-volume set, asymptotic methods provide a rigorous mathematical justification of the classical two-dimensional linear plate and shallow shell theories. Theory of Plates also illustrates how asymptotic methods allow for justification of the Kirchhoff–Love theory of nonlinear elastic plates and presents a detailed mathematical analysis of the von Kármán equations. An extended preface and extensive bibliography have been added to highlight the progress that has been made since the volume's original publication. While each one of the three volumes is self-contained, together the Mathematical Elasticity set provides the only modern treatise on elasticity; introduces contemporary research on three-dimensional elasticity, the theory of plates, and the theory of shells; and contains proofs, detailed surveys of all mathematical prerequisites, and many problems for teaching and self-study These classic textbooks are for advanced undergraduates, first-year graduate students, and researchers in pure or applied mathematics or continuum mechanics. They are appropriate for courses in mathematical elasticity, theory of plates and shells, continuum mechanics, computational mechanics, and applied mathematics in general.

Evolution Equations International Conference on Evolution Equations 1994-10-20 Based on the lnternational Conference on Evolution Equations held recently at Louisiana State University, Baton Rouge, this work presents significant new research papers and state-of-the-art surveys on evolution equations and related fields. Important applications of evolution equations to problems in quantum theory, fluid dynamics, engineering, and biology are highlighted.

***Identification and Control in Systems Governed by Partial Differential Equations* H. Thomas Banks 1993-01-01**

Evolution Equations of von Karman Type Pascal Cherrier 2015-10-12 In these notes we consider two kinds of nonlinear evolution problems of von Karman type on Euclidean spaces of arbitrary even dimension. Each of these problems consists of a system that results from the coupling of two highly nonlinear partial

differential equations, one hyperbolic or parabolic and the other elliptic. These systems take their name from a formal analogy with the von Karman equations in the theory of elasticity in two dimensional space. We establish local (respectively global) results for strong (resp., weak) solutions of these problems and corresponding well-posedness results in the Hadamard sense. Results are found by obtaining regularity estimates on solutions which are limits of a suitable Galerkin approximation scheme. The book is intended as a pedagogical introduction to a number of meaningful application of classical methods in nonlinear Partial Differential Equations of Evolution. The material is self-contained and most proofs are given in full detail. The interested reader will gain a deeper insight into the power of nontrivial a priori estimate methods in the qualitative study of nonlinear differential equations.

System Structure and Control 1992 **V. Strejc 2014-06-28 Provides a useful reference source on system structure and control. Covers, linear systems, nonlinear systems, robust control, implicit system, chaotic systems, singular and time-varying systems.**

Evolution Equations, Semigroups and Functional Analysis Brunello Terreni 2002 Brunello Terreni (1953-2000) was a researcher and teacher with vision and dedication. The present volume is dedicated to the memory of Brunello Terreni. His mathematical interests are reflected in 20 expository articles written by distinguished mathematicians. The unifying theme of the articles is "evolution equations and functional analysis", which is presented in various and diverse forms: parabolic equations, semigroups, stochastic evolution, optimal control, existence, uniqueness and regularity of solutions, inverse problems as well as applications. Contributors: P. Acquistapace, V. Barbu, A. Briani, L. Boccardo, P. Colli Franzone, G. Da Prato, D. Donatelli, A. Favini, M. Fuhrmann, M. Grasselli, R. Illner, H. Koch, R. Labbas, H. Lange, I. Lasiecka, A. Lorenzi, A. Lunardi, P. Marcati, R. Nagel, G. Nickel, V. Pata, M. M. Porzio, B. Ruf, G. Savaré, R. Schnaubelt, E. Sinestrari, H. Tanabe, H. Teismann, E. Terraneo, R. Triggiani, A. Yagi

Differential and Integral Equations 2006

World Congress of Nonlinear Analysts '92 V. Lakshmikantham 1996-01-01

Fifth International Conference on Mathematical and Numerical Aspects of Wave Propagation Alfredo Berm?dez 2000-01-01 This conference was held in Santiago de Compostela, Spain, July 10-14, 2000. This volume contains papers presented at the conference covering a broad range of topics in theoretical and applied wave propagation in the general areas of acoustics, electromagnetism, and elasticity. Both direct and inverse problems are well represented. This volume, along with the three previous ones, presents a state-of-the-art primer for research in wave propagation. The conference is conducted by the Institut National de Recherche en Informatique et en Automatique with the cooperation of SIAM.

The Navier-Stokes Problem in the 21st Century **Pierre Gilles Lemarie-Rieusset 2016-04-06 Up-to-Date Coverage of the Navier–Stokes Equation from an Expert in Harmonic Analysis The complete resolution of the Navier–Stokes equation—one of the Clay Millennium Prize Problems—remains an important open challenge in partial differential equations (PDEs) research despite substantial studies on turbulence and three-dimensional fluids. The Navier–Stokes Problem in the 21st**

Century provides a self-contained guide to the role of harmonic analysis in the PDEs of fluid mechanics. The book focuses on incompressible deterministic Navier–Stokes equations in the case of a fluid filling the whole space. It explores the meaning of the equations, open problems, and recent progress. It includes classical results on local existence and studies criterion for regularity or uniqueness of solutions. The book also incorporates historical references to the (pre)history of the equations as well as recent references that highlight active mathematical research in the field.

Evolution Equations, Control Theory, and Biomathematics Philippe Clement 1993-11-23 Based on the Third International Workshop Conference on Evolution Equations, Control Theory and Biomathematics, held in Hans-sur-Lesse, Belgium. The papers examine important advances in evolution equations related to physical, engineering and biological applications.

***Linear and Quasi-linear Evolution Equations in Hilbert Spaces* Pascal Cherrier 2022-07-14 This book considers evolution equations of hyperbolic and parabolic type. These equations are studied from a common point of view, using elementary methods, such as that of energy estimates, which prove to be quite versatile. The authors emphasize the Cauchy problem and present a unified theory for the treatment of these equations. In particular, they provide local and global existence results, as well as strong well-posedness and asymptotic behavior results for the Cauchy problem for quasi-linear equations. Solutions of linear equations are constructed explicitly, using the Galerkin method; the linear theory is then applied to quasi-linear equations, by means of a linearization and fixed-point technique. The authors also compare hyperbolic and parabolic problems, both in terms of singular perturbations, on compact time intervals, and asymptotically, in terms of the diffusion phenomenon, with new results on decay estimates for strong solutions of homogeneous quasi-linear equations of each type. This textbook presents a valuable introduction to topics in the theory of evolution equations, suitable for advanced graduate students. The exposition is largely self-contained. The initial chapter reviews the essential material from functional analysis. New ideas are introduced along with their context. Proofs are detailed and carefully presented. The book concludes with a chapter on applications of the theory to Maxwell's equations and von Karman's equations.**

Evolution Equations, Semigroups and Functional Analysis Alfredo Lorenzi 2012-12-06 Brunello Terreni (1953-2000) was a researcher and teacher with vision and dedication. The present volume is dedicated to the memory of Brunello Terreni. His mathematical interests are reflected in 20 expository articles written by distinguished mathematicians. The unifying theme of the articles is "evolution equations and functional analysis", which is presented in various and diverse forms: parabolic equations, semigroups, stochastic evolution, optimal control, existence, uniqueness and regularity of solutions, inverse problems as well as applications. Contributors: P. Acquistapace, V. Barbu, A. Briani, L. Boccardo, P. Colli Franzone, G. Da Prato, D. Donatelli, A. Favini, M. Fuhrmann, M. Grasselli, R. Illner, H. Koch, R. Labbas, H. Lange, I. Lasiecka, A. Lorenzi, A. Lunardi, P. Marcati, R. Nagel, G. Nickel, V. Pata, M. M. Porzio, B. Ruf, G. Savaré, R. Schnaubelt, E. Sinestrari, H. Tanabe, H. Teismann, E. Terraneo, R. Triggiani, A. Yagi.

***Mathematical Reviews* 2008**

Inverse Problem Theory and Methods for Model Parameter Estimation Albert Tarantola 2005-01-01 While the prediction of observations is a forward problem, the use of actual observations to infer the properties of a model is an inverse problem. Inverse problems are difficult because they may not have a unique solution. The description of uncertainties plays a central role in the theory, which is based on probability theory. This book proposes a general approach that is valid for linear as well as for nonlinear problems. The philosophy is essentially probabilistic and allows the reader to understand the basic difficulties appearing in the resolution of inverse problems. The book attempts to explain how a method of acquisition of information can be applied to actual real-world problems, and many of the arguments are heuristic.

Discrete and Continuous Dynamical Systems 2006

***Global Well-posedness and Asymptotic Behavior of the Solutions to Non-classical Thermo(visco)elastic Models* Yuming Qin 2016-07-29 This book presents recent findings on the global existence, the uniqueness and the large-time behavior of global solutions of thermo(vis)coelastic systems and related models arising in physics, mechanics and materials science such as thermoviscoelastic systems, thermoelastic systems of types II and III, as well as Timoshenko-type systems with past history. Part of the book is based on the research conducted by the authors and their collaborators in recent years. The book will benefit interested beginners in the field and experts alike.**

Hyperbolic Problems: Theory, Numerics, Applications Michael Fey 1999-04-01 [Infotext]((Kurztext))These are the proceedings of the 7th International Conference on Hyperbolic Problems, held in Zürich in February 1998. The speakers and contributors have been rigorously selected and present the state of the art in this field. The articles, both theoretical and numerical, encompass a wide range of applications, such as nonlinear waves in solids, various computational fluid dynamics from small-scale combustion to relativistic astrophysical problems, multiphase phenomena and geometrical optics. ((Volltext))These proceedings contain, in two volumes, approximately one hundred papers presented at the conference on hyperbolic problems, which has focused to a large extent on the laws of nonlinear hyperbolic conservation. Two-fifths of the papers are devoted to mathematical aspects such as global existence, uniqueness, asymptotic behavior such as large time stability, stability and instabilities of waves and structures, various limits of the solution, the Riemann problem and so on. Roughly the same number of articles are devoted to numerical analysis, for example stability and convergence of numerical schemes, as well as schemes with special desired properties such as shock capturing, interface fitting and high-order approximations to multidimensional systems. The results in these contributions, both theoretical and numerical, encompass a wide range of applications such as nonlinear waves in solids, various computational fluid dynamics from small-scale combustion to relativistic astrophysical problems, multiphase phenomena and geometrical optics.

***Mathematical Theory of Evolutionary Fluid-Flow Structure Interactions* Barbara Kaltenbacher 2018-06-21 This book is devoted to the study of coupled partial**

differential equation models, which describe complex dynamical systems occurring in modern scientific applications such as fluid/flow-structure interactions. The first chapter provides a general description of a fluid-structure interaction, which is formulated within a realistic framework, where the structure subject to a frictional damping moves within the fluid. The second chapter then offers a multifaceted description, with often surprising results, of the case of the static interface; a case that is argued in the literature to be a good model for small, rapid oscillations of the structure. The third chapter describes flow-structure interaction where the compressible Navier-Stokes equations are replaced by the linearized Euler equation, while the solid is taken as a nonlinear plate, which oscillates in the surrounding gas flow. The final chapter focuses on a the equations of nonlinear acoustics coupled with linear acoustics or elasticity, as they arise in the context of high intensity ultrasound applications.

Introduction to Partial Differential Equations Peter J. Olver 2013-11-08 This textbook is designed for a one year course covering the fundamentals of partial differential equations, geared towards advanced undergraduates and beginning graduate students in mathematics, science, engineering, and elsewhere. The exposition carefully balances solution techniques, mathematical rigor, and significant applications, all illustrated by numerous examples. Extensive exercise sets appear at the end of almost every subsection, and include straightforward computational problems to develop and reinforce new techniques and results, details on theoretical developments and proofs, challenging projects both computational and conceptual, and supplementary material that motivates the student to delve further into the subject. No previous experience with the subject of partial differential equations or Fourier theory is assumed, the main prerequisites being undergraduate calculus, both one- and multi-variable, ordinary differential equations, and basic linear algebra. While the classical topics of separation of variables, Fourier analysis, boundary value problems, Green's functions, and special functions continue to form the core of an introductory course, the inclusion of nonlinear equations, shock wave dynamics, symmetry and similarity, the Maximum Principle, financial models, dispersion and solutions, Huygens' Principle, quantum mechanical systems, and more make this text well attuned to recent developments and trends in this active field of contemporary research. Numerical approximation schemes are an important component of any introductory course, and the text covers the two most basic approaches: finite differences and finite elements.

Boundary Stabilization of Thin Plates John E. Lagnese 1989-01-01 Presents one of the main directions of research in the area of design and analysis of feedback stabilizers for distributed parameter systems in structural dynamics. Important progress has been made in this area, driven, to a large extent, by problems in modern structural engineering that require active feedback control mechanisms to stabilize structures which may possess only very weak natural damping. Much of the progress is due to the development of new methods to analyze the stabilizing effects of specific feedback mechanisms. Boundary Stabilization of Thin Plates provides a comprehensive and unified treatment of asymptotic stability of a thin plate when appropriate stabilizing feedback mechanisms acting

through forces and moments are introduced along a part of the edge of the plate. In particular, primary emphasis is placed on the derivation of explicit estimates of the asymptotic decay rate of the energy of the plate that are uniform with respect to the initial energy of the plate, that is, on uniform stabilization results. The method that is systematically employed throughout this book is the use of multipliers as the basis for the derivation of a priori asymptotic estimates on plate energy. It is only in recent years that the power of the multiplier method in the context of boundary stabilization of hyperbolic partial differential equations came to be realized. One of the more surprising applications of the method appears in Chapter 5, where it is used to derive asymptotic decay rates for the energy of the nonlinear von Karman plate, even though the technique is ostensibly a linear one.

Mathematical Elasticity **1997-07-22 The objective of Volume II is to show how asymptotic methods, with the thickness as the small parameter, indeed provide a powerful means of justifying two-dimensional plate theories. More specifically, without any recourse to any a priori assumptions of a geometrical or mechanical nature, it is shown that in the linear case, the three-dimensional displacements, once properly scaled, converge in H1 towards a limit that satisfies the well-known two-dimensional equations of the linear Kirchhoff-Love theory; the convergence of stress is also established. In the nonlinear case, again after ad hoc scalings have been performed, it is shown that the leading term of a formal asymptotic expansion of the three-dimensional solution satisfies well-known two-dimensional equations, such as those of the nonlinear Kirchhoff-Love theory, or the von Kármán equations. Special attention is also given to the first convergence result obtained in this case, which leads to two-dimensional large deformation, frame-indifferent, nonlinear membrane theories. It is also demonstrated that asymptotic methods can likewise be used for justifying other lower-dimensional equations of elastic shallow shells, and the coupled pluri-dimensional equations of elastic multi-structures, i.e., structures with junctions. In each case, the existence, uniqueness or multiplicity, and regularity of solutions to the limit equations obtained in this fashion are also studied.**

Mathematical Models for Suspension Bridges Filippo Gazzola 2015-05-29 This work provides a detailed and up-to-the-minute survey of the various stability problems that can affect suspension bridges. In order to deduce some experimental data and rules on the behavior of suspension bridges, a number of historical events are first described, in the course of which several questions concerning their stability naturally arise. The book then surveys conventional mathematical models for suspension bridges and suggests new nonlinear alternatives, which can potentially supply answers to some stability questions. New explanations are also provided, based on the nonlinear structural behavior of bridges. All the models and responses presented in the book employ the theory of differential equations and dynamical systems in the broader sense, demonstrating that methods from nonlinear analysis can allow us to determine the thresholds of instability.

Journal of analysis and its application 2003

Dynamical Systems: Theoretical and Experimental Analysis Jan Awrejcewicz

2016-09-17 The book is the second volume of a collection of contributions devoted to analytical, numerical and experimental techniques of dynamical systems, presented at the international conference "Dynamical Systems: Theory and Applications," held in Łódź, Poland on December 7-10, 2015. The studies give deep insight into new perspectives in analysis, simulation, and optimization of dynamical systems, emphasizing directions for future research. Broadly outlined topics covered include: bifurcation and chaos in dynamical systems, asymptotic methods in nonlinear dynamics, dynamics in life sciences and bioengineering, original numerical methods of vibration analysis, control in dynamical systems, stability of dynamical systems, vibrations of lumped and continuous sytems, non-smooth systems, engineering systems and differential equations, mathematical approaches to dynamical systems, and mechatronics.

Selected Papers of J. M. Burgers F.T. Nieuwstadt 2012-12-06 J.M. Burgers (1895--1981) is regarded as one of the leading scientists in the field of fluid mechanics, contributing many important results, a number of which still bear his name. However, the work of this outstanding scientist was mostly published in the Proceedings and Transactions of The Royal Netherlands Academy of Sciences, of which he was a distinguished member. Nowadays, this work is almost impossible to obtain through the usual library channels. Therefore, the editors have decided to reissue the most important work of J.M. Burgers, which gives the reader access to the original papers which led to important results, now known as the Burgers Equation, the Burgers Vector and the Burgers Vortex. Further, the book contains a biography of J.M. Burgers, which provides the reader with both information on his scientific life, as well as a rounded impression of the many activities which J.M. Burgers performed or was involved in outside his science.

***Annual Report for the Year ...* University of Minnesota. Institute for Mathematics and Its Applications 1992**

Dynamics of Quasi-Stable Dissipative Systems Igor Chueshov 2015-09-29 This book is devoted to background material and recently developed mathematical methods in the study of infinite-dimensional dissipative systems. The theory of such systems is motivated by the long-term goal to establish rigorous mathematical models for turbulent and chaotic phenomena. The aim here is to offer general methods and abstract results pertaining to fundamental dynamical systems properties related to dissipative long-time behavior. The book systematically presents, develops and uses the quasi-stability method while substantially extending it by including for consideration new classes of models and PDE systems arising in Continuum Mechanics. The book can be used as a textbook in dissipative dynamics at the graduate level. Igor Chueshov is a Professor of Mathematics at Karazin Kharkov National University in Kharkov, Ukraine.

Control and Boundary Analysis John Cagnol 2005-03-04 This volume comprises selected papers from the 21st Conference on System Modeling and Optimization in Sophia Antipolis, France. It covers over three decades of studies involving partial differential systems and equations. Topics include: the modeling of continuous mechanics involving fixed boundary, control theory, shape optimization and moving boundaries, and topological shape optimization. This

edition discusses all developments that lead to current moving boundary analysis and the stochastic approach.