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WORKSHOP
ON
**APPLIED
MATHEMATICS**
in
JANUARY 1 – 3, 2010

NEW DIRECTIONS

The Workshop on New Directions in Applied Mathematics is a satellite meeting of ICTS Inaugural Event. It will focus on highlighting some novel themes in applied mathematics that have dominated the applied mathematics landscape in recent years and are only beginning to take roots in India. These have been spurred by recent developments in natural sciences such as statistical mechanics and chemical dynamics, unique computational problems introduced by very large data sets, and problems arising from engineering disciplines of communications and computer science that are defining the tenor of the future through revolutions such as the Internet. These have not only thrown open new issues, but whole new paradigms, spawning entirely new subject areas: complex systems, random graphs, analysis in very large dimensional spaces, to mention a few.

The Workshop will bring together some of the leading researchers in these frontiers to give a bird's eye view of their respective specialties and a roadmap for the future. It is hoped that this will spur some young Indian applied mathematicians to venture into such uncharted territories that have a lot of intellectual adventures to offer.

Faculty and students interested in participating in this workshop should apply online by clicking on the "Register" link at the following address: <http://www.icts.res.in/program/ndam>. Selected participants will be reimbursed their travel expense (as per Government of India norms) and provided local hospitality. Local participants are also required to formally apply.

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Deadline for receiving applications:
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New Directions In Applied Mathematics

AW Chickering



New Directions In Applied Mathematics:

New Directions in Applied Mathematics P.J. Hilton, G.S. Young, 2012-12-06 It is close enough to the end of the century to make a guess as to what the Encyclopedia Britannica article on the history of mathematics will report in 2582 We have said that the dominating theme of the Nineteenth Century was the development and application of the theory of functions of one variable At the beginning of the Twentieth Century mathematicians turned optimistically to the study of functions of several variables But wholly unexpected difficulties were met new phenomena were discovered and new fields of mathematics sprung up to study and master them As a result except where development of methods from earlier centuries continued there was a recoil from applications Most of the best mathematicians of the first two thirds of the century devoted their efforts entirely to pure mathematics In the last third however the powerful methods devised by then for higher dimensional problems were turned onto applications and the tools of applied mathematics were drastically changed By the end of the century the temporary overemphasis on pure mathematics was completely gone and the traditional interconnections between pure mathematics and applications restored This century also saw the first primitive beginnings of the electronic calculator whose development in the next century led to our modern methods of handling mathematics Current and Future

Directions in Applied Mathematics Mark Alber, Bei Hu, Joachim Rosenthal, 2012-12-06 Mark Alber Bei Hu and Joachim Rosenthal vii Part I Some Remarks on Applied Mathematics Roger Brockett 1 Mathematics is a Profession Christopher 1 Byrnes 4 Comments on Applied Mathematics Avner Friedman 9 Towards an Applied Mathematics for Computer Science Jeremy Gunawardena 11 Infomercial for Applied Mathematics Darryl Holm 15 On Research in Mathematical Economics M Ali Khan 21 Applied Mathematics in the Computer and Communications Industry Brian Marcus 25 Trends in Applied Mathematics Jerrold E Marsden 28 Applied Mathematics as an Interdisciplinary Subject Clyde F Martin 31 vi Contents Panel Discussion on Future Directions in Applied Mathematics Laurence R Taylor 38 Part II Feedback Stabilization of Relative Equilibria for Mechanical Systems with Symmetry A M Bloch J E Marsden and G Sanchez 43 Oscillatory Descent for Function Minimization R Brockett 65 On the Well Posedness of the Rational Covariance Extension Problem C I Byrnes H J Landau and A Lindquist 83 Singular Limits in Fluid Mechanics P Constantin 109 Singularities and Defects in Patterns Far from Threshold N M Ercolani 137 Mathematical Modeling and Simulation for Applications of Fluid Flow in Porous Media R E Ewing 161 On Loeb Measure Spaces and their Significance for Non Cooperative Game Theory M A Khan and Y Sun 183 Mechanical Systems with Symmetry Variational Principles and Integration Algorithms J E Marsden and J M Wendlandt 219 Preface The applied sciences are faced with increasingly complex problems which call for sophisticated mathematical models New Directions in applied mathematics, 1982 **New Directions in Applied Mathematics**, **New Directions in Applied Mathematics** Kenneth Baclawski, 1982 The Merging of Disciplines: New Directions in Pure, Applied, and Computational Mathematics Richard E. Ewing, Kenneth I. Gross, Clyde F. Martin, 2012-12-06 This volume is the Proceedings of the

symposium held at the University of Wyoming in August 1985 to honor Gail Young on his seventieth birthday which actually took place on October 3 1985 and on the occasion of his retirement Nothing can seem more natural to a mathematician in this country than to honor Gail Young Gail embodies all the qualities that a mathematician should possess He is an active and effective research mathematician having written over sixty papers in topology n dimensional analysis complex variables and miscellanea He is an outstanding expositor as his fine book *Topology* written with J G Hocking Addison Wesley 1961 amply demonstrates He has a superlative record in public office of outstanding unstinting service to the mathematical community and to the cause of education But what makes Gail unique and special is that throughout all aspects of his distinguished career he has emphasized human values in everything he has done In touching the lives of so many of us he has advanced the entire profession Deservedly he has innumerable friends in the mathematical community the academic community and beyond

New Directions and Applications in Control Theory Wijesuriya P. Dayawansa, Anders Lindquist, Yishao Zhou, 2005-08-31 This volume contains a collection of papers in control theory and applications presented at a conference in honor of Clyde Martin on the occasion of his 60th birthday held in Lubbock Texas November 14 15 2003

New Directions in Two-Year College Mathematics Donald J. Albers, Stephen B. Rodi, Ann E. Watkins, 2012-12-06 by Donald J Albers ix

INTRODUCTION In July of 1984 the first national conference on mathematics education in two year colleges was held at Menlo College The conference was funded by the Alfred P Sloan Foundation Two year colleges account for more than one third of all undergraduate enrollments in mathematics and more than one half of all college freshmen are enrolled in two year colleges These two facts alone suggest the importance of mathematics education in two year colleges particularly to secondary schools four year colleges and universities For a variety of reasons four year colleges and universities are relatively unaware of two year colleges Arthur Cohen who was a participant at the New Directions conference warns Four year colleges and universities ignore two year colleges at their own peril Ross Taylor another conference participant encouraged two year college faculty to be ever mindful of their main source of students secondary schools and to work hard to strengthen their ties with them There are many other reasons why it was important to examine two year college mathematics from a national perspective 1 Over the last quarter century no other sector of higher education has grown so rapidly as have two year colleges Their enrollments tripled in the 60 s doubled in the 70 s and continue to increase rapidly in the 80 s x 2 Twenty five years ago two year colleges accounted for only one seventh of all undergraduate mathematics enrollments today the fraction is more than one third

Applied Mathematical Modeling Douglas R. Shier, K.T. Wallenius, 1999-11-11 The practice of modeling is best learned by those armed with fundamental methodologies and exposed to a wide variety of modeling experience Ideally this experience could be obtained by working on actual modeling problems But time constraints often make this difficult *Applied Mathematical Modeling* provides a collection of models illustrating the power and richness of the mathematical sciences in supplying insight into the operation of important real world systems It

fills a gap within modeling texts focusing on applications across a broad range of disciplines The first part of the book discusses the general components of the modeling process and highlights the potential of modeling in practice These chapters discuss the general components of the modeling process and the evolutionary nature of successful model building The second part provides a rich compendium of case studies each one complete with examples exercises and projects In keeping with the multidimensional nature of the models presented the chapters in the second part are listed in alphabetical order by the contributor s last name Unlike most mathematical books in which you must master the concepts of early chapters to prepare for subsequent material you may start with any chapter Begin with cryptology if that catches your fancy or go directly to bursty traffic if that is your cup of tea Applied Mathematical Modeling serves as a handbook of in depth case studies that span the mathematical sciences building upon a modest mathematical background Readers in other applied disciplines will benefit from seeing how selected mathematical modeling philosophies and techniques can be brought to bear on problems in their disciplines The models address actual situations studied in chemistry physics demography economics civil engineering environmental engineering industrial engineering telecommunications and other areas

New Directions in Neural Networks Bruno Apolloni, Simone Bassi, M. Marinaro, 2009 A collection of selected papers from the 18th WIRN workshop the annual meeting of the Italian Neural Networks Society SIREN It is divided in two general subjects models and applications and two specific ones economy and complexity and remote sensing image processing

Whispering the Strategies of Language: An Emotional Journey through **New Directions In Applied Mathematics**

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