

CONTEMPORARY MATHEMATICS

658

A Panorama of Mathematics: Pure and Applied

Conference
Mathematics and its Applications
November 14–17, 2014
Kuwait University, Safat, Kuwait

Carlos M. da Fonseca
Dinh Van Huynh
Steve Kirkland
Vu Kim Tuan
Editors



American Mathematical Society

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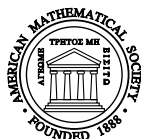
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Providence, Rhode Island

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Preface

The Conference on Mathematics and its Applications - 2014 was held at Kuwait University, Kuwait, November 14-17, 2014.

The main aim of the conference was to bring together excellence and expertise in mathematics in a bid to bridge different mathematical disciplines and to frame new forefronts of research in both pure and applied mathematics. The conference was therefore consciously chosen to be broadly-based and multi-themed in order to reflect the diversity in mathematics and stimulate interdisciplinary exchange. The main themes of the conference were Algebra, Analysis, Discrete Mathematics, and Inverse Problems and Imaging.

Nearly 100 researchers from 23 different countries attended the conference. The plenary speakers were: Thanasis Fokas, University of Cambridge, UK; Volker Mehrmann, Technische Universität Berlin, Germany; Carsten Thomassen, Technical University of Denmark, Lyngby, Denmark; Vladimir Voevodsky, Institute for Advanced Study, Princeton, New Jersey, USA, and Enrique Zuazua, Basque Center for Applied Mathematics, Bilbao, Basque Country, Spain.

The conference also featured an invited address by Habib Ammari, from the École Normale Supérieure, Paris, France, who was the winner of the 2013 Kuwait Prize in Basic Sciences - Mathematics awarded by Kuwait Foundation for the Advancement of Sciences (KFAS).

The plenary lectures detailed recent mathematical advances, emphasized the interrelations between algebraic geometry and algebraic topology; stressed the link between partial differential equations and control theory; exposed the growing trend between biomedical imaging and inverse problems; accentuated research and development in both linear and abstract algebra and their applications; and focused on modern aspects of graph theory and combinatorics. The parallel sessions covered a wide spectrum of mathematical areas including combinatorial matrix theory, numerical linear algebra, operator theory, discrete mathematics, the space-time fractional Schrödinger equation, hyperbolic systems, ill-posed problems and boundary value problems, and PDEs, just to name a few.

During the conference some recent advances in mathematics were highlighted with some interesting applications to science, engineering and industry, providing an extraordinary opportunity for young researchers to see much of the vast potential of mathematics.

In spite of the intensive scientific program of the conference, the participants had the opportunity to enjoy a social program that included an itinerary through Kuwait City, as well as a banquet dinner held at the Marine Sciences Center of Kuwait University.

The organizing committee of the conference did an excellent job. The committee consisted of Fadhel Al-Musallam (Chairman), Mansour Al-Zanaidi, Carlos M. da Fonseca, and Michael Johnson. All of them are members of the Department of Mathematics at Kuwait University.

Special thanks are extended to Habib Ammari, Gang Bao, Aurel Bejancu, Amin Boumenir, Marian Deaconescu, Wen-Fong Ke, Steve Kirkland, Denis Serre, and Holger Wendland who made up the Scientific Committee of the conference.

We acknowledge Kuwait Foundation for the Advancement of Sciences (KFAS) and Kuwait University for their financial support to the conference.

This volume of Contemporary Mathematics contains the main research contributions to the conference and presents a wide range of recent advances on pure and applied mathematics. We are grateful to the American Mathematical Society for publishing this volume.

The Editors

Carlos M. da Fonseca

Dinh Van Huynh

Steve Kirkland

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This volume contains the proceedings of the Conference on Mathematics and its Applications–2014, held from November 14–17, 2014, at Kuwait University, Safat, Kuwait.

Papers contained in this volume cover various topics in pure and applied mathematics ranging from an introductory study of quotients and homomorphisms of C -systems, also known as contextual pre-categories, to the most important consequences of the so-called Fokas method.

Also covered are multidisciplinary topics such as new structural and spectral matricial results, acousto-electromagnetic tomography method, a recent hybrid imaging technique, some numerical aspects of sonic-boom minimization, PDE eigenvalue problems, von Neumann entropy in graph theory, the relative entropy method for hyperbolic systems, conductances on grids, inverse problems in magnetohydrodynamics, location and size estimation of small rigid bodies using elastic far-fields, and the space-time fractional Schrödinger equation, just to cite a few.

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