CONTEMPORARY MATHEMATICS

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Groups, Algebras and Applications

XVIII Latin American Algebra Colloquium
August 3–8, 2009
São Pedro, SP, Brazil

César Polcino Milies
Editor

American Mathematical Society

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Preface

This volume contains papers presented to the XVIII Latin American Algebra Colloquium, held in São Pedro, SP, Brazil, from August 3rd to 8th, 2009.

This series of conferences started in the period from 1980 to 1994 as rather local meetings, gathering mathematicians from Argentina and Chile and a few invited speakers from other countries. The series restarted in 2001, as truly international meetings, gathering participants from most Latin American Countries and invited speakers from all over the world.

Since then, conferences were held every two years in La Falda, Argentina; Cocoyoc, Mexico; Colonia del Sacramento, Uruguay; Medellin, Colombia; and now in Brazil.

The explicit aims of the Latin American Algebra Colloquiums are the following:

- to promote the development of Algebra through the interaction among Latin American mathematicians and also mathematicians from other countries who were specifically invited to these meetings.
- to contribute to the updating of the local mathematical community by inviting internationally renown researchers both from the region and from abroad.
- to introduce graduate and late undergraduate students to the actual state-of-the-art of research on Algebra.
- to discuss the applications of Algebra in other areas of human knowledge, such as Mathematical Physics, Biology, Coding Theory, Cryptography, etc.

During the meeting, several parallel activities were developed, covering all areas of Algebra and its applications.

Plenary talks included conferences by the following invited speakers: N. Andruskiewitsch (Argentina), S. Collier Coutinho (Brazil), J.A. de la Peña (Mexico), S.K. Jain (USA), C. Kassel (France), V. Serganova (USA) and S. Sidki (Brazil).

More than a hundred contributed talks were distributed in the following special sessions: Number Theory, Algebraic Geometry and Commutative Algebra; Group Theory; Ring Theory; Representation of Algebras; Homological Methods in Algebra; Hopf Algebras; Non-Associative Algebra; Lie Theory and Applications in Mathematical Physics and Finite Fields, Coding Theory and Cryptography.

Also, three mini-courses were offered: *Cluster algebras and cluster categories* by R. Schiffler, *Quantum groups and Hopf algebras* by G. A. García and *An introduction to central simple algebras and the Brauer group* by E. Tengan.

There were 208 participants, including 67 Brazilian researchers and 71 visitors, from countries such as Argentina, Australia, Belgium, Canada, Chile, Colombia, Denmark, Spain, USA, France, Holland, India, England, Italy, Israel, Mexico, Portugal, Japan, Puerto Rico, New Zealand, Russia, Serbia and Uruguay. Graduate students from Argentina, Brazil, Canada, Chile, Colombia, Uruguay and the USA also took part in this event.

This conference was organized by the Instituto de Matemática e Estatística da Universidade de São Paulo and the Instituto Nacional de Ciência e Tecnologia–Matemática (INCTMat) and sponsored by the International Mathematical Union. We gratefully aknowledge the financial support received from the following Brazilian Agencies: Fundação de Amparo à Pesquisa de do Estado de São Paulo (FAPESP), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)

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This book contains the proceedings of the XVIII Latin American Algebra Colloquium, held from August 3–8, 2009, in São Paulo, Brazil.

It includes research articles as well as up-to-date surveys covering several directions of current research in algebra, such as Asymptotic Codimension Growth, Hopf Algebras, Structure Theory of both Associative and Non-Associative Algebras, Partial Actions of Groups on Rings, and contributions to Coding Theory.

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