

CONTEMPORARY MATHEMATICS

656

Mathematical Congress of the Americas

First Mathematical Congress of the Americas
August 5–9, 2013
Guanajuato, México

José A. de la Peña
J. Alfredo López-Mimbela
Miguel Nakamura
Jimmy Petean
Editors



American Mathematical Society

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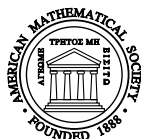
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American Mathematical Society
Providence, Rhode Island

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Preface

In January 2011, during the AMS meeting in New Orleans, representatives of the major mathematical societies of the continent agreed to create the Mathematical Congress of the Americas. Months later, a meeting "Mathematics in the Americas" was held at IMPA, Rio de Janeiro, where it was decided that the inaugural MCA would take place in Guanajuato, Mexico, on August 5–9, 2013. With a four-year periodicity, the goal of the Congress is to highlight the excellence of mathematical achievements in the Americas within the context of the international arena and to foster the scientific integration of all mathematical communities in the continent.

Guanajuato is a historic city designated by UNESCO as World Heritage. The selection of this city to host such an important meeting was proposed by CIMAT, the Center of Mathematics of Guanajuato, one of the important centers of research in México. The response to the call for participation was excellent.

Essential for the response of the academic community to the MCA2013 was the Steering Committee of the Congress. The international leadership and advice of Susan Friedlander (AMS), Marcelo Viana (SMB), Alejandro Adem (CMS), Servet Martínez (UMALCA) and Uri Ascher (SIAM) were always ready and important. They, plus José A. de la Peña (SMM), represented the sponsor organizations of the MCA2013: the American Mathematical Society, the Sociedade Matemática Brasileira, the Canadian Mathematical Society, the Unión Matemática de América Latina y el Caribe, the Society for Industrial and Applied Mathematics and the Sociedad Matemática Mexicana. The work of many other mathematicians should be acknowledged: the program Committee, the Prize Committee, the local organizing Committee formed by colleagues of CIMAT and the state University of Guanajuato, and many others who helped to organize the participation of close to 1,000 researchers and students from more than 40 countries of the continent and beyond.

The MCA2013 defined, no doubt, a benchmark for mathematics in the continent. The Program Committee contributed to this purpose by selecting an exceptional group of distinguished mathematicians as plenary and invited speakers of the meeting. Those mathematicians, as well as the winners of MCA awards, were invited to submit papers to this volume. In this way, the *Proceedings of the First Mathematical Congress of the Americas* is a small testimony of the state of the art of mathematics in the Americas. It is a pleasure that the American Mathematical Society accepted to publish the Proceedings in their *Contemporary Mathematics* series.

Last, but not least, the financial support of Consejo Nacional de Ciencia y Tecnología, México was fundamental for the success of the Congress. The local support of CIMAT was instrumental for the smooth running of every aspect (and there were many!) of the event: starting the preparations two years before MCA2013, during

the Congress and afterwards, closing the work with the edition of these Proceedings. It is a pleasure to thank all institutions and people whose commitment and work made possible the *First Mathematical Congress of the Americas*.

The Editorial Committee

José-Antonio de la Peña

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Centro de Investigación en Matemáticas, Guanajuato, México.

Abril, 2015.

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This volume contains the proceedings of the First Mathematical Congress of the Americas, held from August 5–9, 2013, in Guanajuato, México. With the participation of close to 1,000 researchers from more than 40 countries, the meeting set a benchmark for mathematics in the two continents.

The papers, written by some of the plenary and invited speakers, as well as winners of MCA awards, cover new developments in classic topics such as Hopf fibrations, minimal surfaces, and Markov processes, and provide recent insights on combinatorics and geometry, isospectral spherical space forms, homogenization on manifolds, and Lagrangian cobordism, as well as applications to physics and biology.

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