International Center for Mathematics

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Editorial

As the International Center for Mathematics (CIM) celebrates its twentieth anniversary this month, it is also the perfect opportunity to look back on this past year, which has undoubtedly been one of the most ambitious, eventful, and impactful years in the association's history. With the support of our associates from 13 leading Portuguese universities, our far-flung partners at the University of Macau, and member institutions such as the Portuguese Mathematical Society, CIM in 2013 showed yet again the importance of a forum such as this to bring together leading Portuguese-speaking scientists and researchers around the world.

The hallmark project of the year was the UNESCO-backed International Program Mathematics of Planet Earth (MPE) 2013, which CIM participated in as a partner institution. This ambitious and global program was tasked with exploring the dynamic processes underpinning our planet's climate and man-made societies, and laying the groundwork for the kind of mathematical and interdisciplinary collaborations that will be pivotal to addressing the myriad issues and challenges facing our planet now and in the future. CIM embraced the MPE call to action by organizing two headline conferences in March and September of this year. In the spring CIM held the "Mathematics of Energy and Climate Change" conference in Lisbon, with the autumn conference was titled "Dynamics, Games, and Science." Both were held at the world-renowned Calouste Gulbenkian Foundation in Lisbon, one of more than 15 respected Portuguese foundations and organizations that enthusiastically supported the CIM conferences. As well as the conferences themselves, well attended "advanced schools" were held before and after each gathering: in the spring at the Universidade de Lisboa and in the fall at the Universidade Técnica de Lisboa.

These conferences succeeded in bringing together some of the most accomplished mathematical and scien-

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tific minds from across the Portuguese-speaking world and beyond, while also serving as a launchpad for one of CIM's most exciting endeavors in many years. Just recently the center announced the new CIM Series in Mathematical Sciences, to be published by Springer-Verlag, which will include lecture notes and research monographs. "The collaboration with Springer will bring mathematics developed in Portugal to a global audience," CIM President Alberto Adrego Pinto said at the time of the announcement, "and will help strengthen our contacts with the international mathematics community."

The first volume in the series, consisting of review articles selected from work presented at the "Mathematics of Energy and Climate Change" and "Dynamics, Games, and Science" conferences, already make a powerful case for CIM's international profile and reach. There's the impressive roster of mathematicians and researchers from across the United States, Brazil, Portugal and several other countries whose work will be included in the volumes. Then there's the editorial board responsible for this first installment, a world-renowned quartet comprised of: president of the European Research Council starting on January 1, 2014, Jean Pierre Bourguignon, of École Polytechnique; former Société Mathématiques Suisse and European Mathematical Society president Rolf Jeltsch, of ETH Zurich; current Sociedade Brasileira de Matemática president Marcelo Viana, of Brazil's Instituto Nacional de Matemática Pura e Aplicada; and current CIM president, Alberto Pinto, of Universidade do Porto. This series represents a very real scientific and reputational achievement for the center.

While the MPE program was a key focus of CIM's activities this year, the center did organize a number of other events aimed at fostering closer ties and collaboration between mathematicians and other scientists, principally in Portugal and other Portuguese-speaking countries. In May, CIM held the 92nd European Study Group with Industry meeting, part of a vitally important series held throughout Europe to encourage and strengthen links between mathematics and industry. As the MPE program made clear, humanity faces all manner of challenges, both manmade and from nature, many of which industry is attempting to solve but that mathematics and science are most well-equipped to tackle. Yet it is often industry that spawns the kinds of innovative ideas that will launch the next great scientific and technological revolutions, which academia must engage with. The potential for dialogue and cooperation between academia and industry is, in fact, so great that I have actually made it one of the core initiatives of my presidency of the Society for Industrial and Applied Mathematics (SIAM), based in the United States of America.

The center also put on a number of seminars, summer schools, and workshops on subjects ranging from game theory to nonlinear mapping to stochastic dynamics in finance to representation theory. These were held at many of CIM's associate institutions, including universities in Porto, Évora, Coimbra, Lisbon, Aveiro, and even Macau, the better to support a regular exchange of ideas and build a lasting network among Portuguese mathematicians and researchers.

As we look back at the successful year CIM has had in 2013, we should also think on the dramatic changes taking place in the world at this moment, changes that put the mathematical sciences — and I include here statistics, operational research, and computer science — front and center. Foremost among these is the rise of Big Data, especially where it relates to national security, finance, medicine, and the Internet (among other fields), which has come to dominate research in many scientific sectors and requires new analytical tools that mathematics can provide. This new landscape will require an unparalleled partnership between science and industry, and is why the European Commission recently announced its Europe 2020 Growth Strategy, which calls for investment in groundbreaking research, innovation in industry, and the cultivation of a new generation of scientists. It is no coincidence that these three pillars are at the core of CIM's own mission.

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