

New Momentum for Applied Mathematics in East Asia

By Ming-Chih Lai and Irene Fonseca

With more than 120 participants from the region, the 8th conference of the SIAM East Asia Section set a record for attendance. Held at the National Taiwan University, in Taipei, June 25–27, 2012, EASIAM2012 featured SIAM keynote speakers Yalchin Efendiev (Texas A&M University) and Linda Petzold (UC Santa Barbara), who presented work at the frontiers of generalized multi-scale finite element methods and spatial stochastic amplification in cell polarization, respectively. Regional invited speakers were Hitoshi Arai (University of Tokyo), Victor Didenko (University of Brunei Darussalam), Leevan Ling (Hong Kong Baptist University), Weiqing Ren (National University of Singapore), and Wei-Cheng Wang (National Tsing Hua University). Student Paper Prizes were awarded to Xuanchung Dong (National University of Singapore), Zhenning Cai (Peking University), and Seogjeong Lee (Seoul National University); with support from SIAM, each student received a \$300 award.

Perhaps the most exciting nontechnical moment (besides the banquet with a performance of traditional Chinese music) came at the closing ceremony, when two new iPads and other prizes were given. What a fun, joyful way to wrap up this exciting conference!



The opportunity to host EASIAM2012 injected new momentum into applied mathematics in Taiwan. One indication was the kickoff meeting of the Taiwan Society for Industrial and Applied Mathematics (TWSIAM), after two years of preparation, on the second evening of EASIAM2012.

As the host of EASIAM2012, the mathematical community in Taiwan demonstrated the role it has played in advancing applied mathematics in East Asia in the past few decades. About twenty years ago, Taiwanese students started to return home in large numbers after receiving their PhDs abroad (mostly in the U.S.), and mathematical research in Taiwan has progressed significantly ever since. The National Center for Theoretical Sciences (NCTS), established in 1997, has given a boost to core, strategic areas of mathematical research in Taiwan, including number theory, algebraic geometry, and partial differential equations. More recently, several Taiwanese universities have joined the effort to strengthen the mathematical sciences by creating research centers, including the Taida Institute for Mathematical Sciences (TIMS) at the National Taiwan University, and the Center of Mathematical Modeling and Scientific Computing (CMMSC) at the National Chiao Tung University, to name just a few.

In addition to the activities at the universities, the Institute of Mathematics at Academia Sinica has served as a forum for the mathematical community worldwide; it also offers extensive postdoctoral and assistantship programs. The Mathematical Division of the Taiwanese National Science Council has created a subdivision for Interdisciplinary Mathematical Sciences, which, starting in 2013, will support and encourage mathematicians to engage in research that crosses disciplinary boundaries.

The annual meeting of the Mathematical Society of Taiwan, along with exchange participants from Japan and Korea, regularly features internationally recognized invited speakers. (In 2012, Ching-Li Chai of the Academia Sinica and the University



Pictured at the meeting of the Mathematical Society of Taiwan at National Chiao Tung University, Hsinchu, Taiwan, December 2012 (from left): Henry Horng-Shing Lu, Ming-Chih Lai (EASIAM president), Ching-Li Chai, Sze-Bi Hsu, Yan-Hwa Wu (NCTU president, Taiwan), Irene Fonseca (SIAM president), Gerard Jennhwa Chang (TMS president, Taiwan), Jong Hae Keum, Myung Hwan Kim (KMS president, Korea), Hyungju Park, Dongsu Kim (NIMS president, Korea), I-Liang Chern (TWSIAM president, Taiwan), and Chiuyuan Chen.

of Pennsylvania and Irene Fonseca, of Carnegie Mellon University, then SIAM president-elect, were among the plenary speakers.)

In many additional ways, 2012 was a fruitful year for mathematics in Taiwan. NCTS organized and generously supported a special year in applied mathematics, which ended on a high note with an international workshop, Theoretical and Computational Challenges in PDEs, and a Distinguished Lecture by Fanghua Lin, "Theory and Applications of Homogenization." In January 2012, ten months before his article appeared in *SIAM News*, Bob Eisenberg made mathematicians aware of the potential benefits of research on ionic solutions at a workshop, Mathematical Models of Electrolytes with Application to Molecular Biology, held at TIMS. A

small focused group on biological complex fluids that formed after the workshop continues to work on this front. Finally, in September 2012, prior to the worldwide launch of Mathematics of Planet Earth 2013 (MPE2013), TIMS held a five-day workshop titled International Science Conference on Climate Change: Multidecadal and Beyond, bringing together applied mathematicians and researchers from atmospheric, oceanic, geophysical, meteorological, and environmental sciences to exchange ideas and to address issues arising with climate change.

The future for applied mathematics in Taiwan is exciting! Stay tuned!

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