News in Asia Pacific Region

News from Australia

Community of Presidents of Statistical Societies (COPSS) Awards 2017

The 2017 COPSS Award Ceremony took place on August 2, 2017, in Baltimore. Aurore Delaigle from the University of Melbourne was awarded the George W. Snedecor Award for fundamental and groundbreaking contributions to the statistical theory of group testing of pooled laboratory samples, and for contributions to measurement error methods and density estimation.

Dr. Delaigle received her degree in Mathematics and PhD in Statistics at Université catholique de Louvain. She is currently Professor at the University of Melbourne School of Mathematics and Statistics and a Future Fellow of the Australian Research Council.

This award, established in 1976, honours an individual who was instrumental in the development of statistical theory in biometry. The award is for a noteworthy publication in biometry within three years of the date of the award. Starting in 1991 this award is given every other year, in odd years, and consists of a plaque and a cash award.

European Girls' Mathematical Olympiad

Australia has applied to send a team to the European Girls' Mathematical Olympiad for the first time in 2018. The Australian Mathematics Trust will be using its International Mathematical Olympiad (IMO) expertise and resources to identify, train and support the four-member team.

When asked about Australia's participation in EGMO, Cheryl Praeger, Chair of the Australian Mathematical Olympiad Committee (AMOC), said, 'This is an opportunity for Australian girls who enjoy maths not only to gain vital experience in competitions like this, but it increases their confidence to try other events and to network, mingle, and "not be the only girl in the room"'.

Angelo Di Pasquale, AMOC Director of Training, said, 'We are hopeful that EGMO can become a regular part of our Olympiad calendar. It will provide girls with a new opportunity to train in problem solving, and will help us expand our pool of potential IMO participants.'

EGMO is an international mathematics competition for female high school students. Similar in form to the International Mathematical Olympiad, there are six proof-style problems given over two days. EGMO has steadily grown into a major international event since its inception in 2012, with the 2017 EGMO involving 44 countries. A number of non-European nations regularly participate including India, Japan, the USA and Mexico. EGMO 2018 will be held in Florence, Italy, from April 9–15.

2017 International Federation of Automatic Control (IFAC) Foundation Award

The 2017 IFAC Foundation award was given to PhD candidate Salman Hafeez, Associate Professor Steven Weller, and Associate Professor Christopher Kellett from the University of Newcastle School of Electrical Engineering and Computing for work showing how techniques in systems and control engineering can be applied to quantifying the economic damage of greenhouse gas emissions.

This inaugural award recognises a contribution which shows how automatic control science and technology can contribute to significant advances in the broad area of sustainable development. The award-winning paper "Impact of climate model parametric uncertainty in an MPC implementation of the DICE integrated assessment model" shows how control engineering techniques can be applied to robustly estimate the so-called 'social cost of carbon dioxide'. The award was presented at the Closing Ceremony of the 2017 IFAC World Congress in Toulouse, France on July 14, 2017.

The 2017 Alf van der Poorten Travelling Fellowship

The 2017 Alf van der Poorten Travelling Fellowship has been awarded to Dr Joshua Howie. The Alf van der Poorten Travelling Fellowships aim to assist young pure mathematicians in travelling in Australia and

overseas so that they can enrich their mathematical research through contact with other mathematicians. The Fellowship is offered in odd-numbered years to researchers who have obtained their PhD in pure mathematics from an Australian university.

Dr Howie obtained his PhD in 2014 at the University of Melbourne under the supervision of Professor J. Hyam Rubinstein, on the topic 'Surface-alternating knots and links'. He is currently a postdoctoral fellow at Monash University. In 2014 he won the B.H. Neumann prize at the AustMS meeting and the Gordon Preston Prize. As an undergraduate at the University of Otago, he won the D.B. Sawyer Prize in Mathematics (3rd year), University of Otago, the Richardson Prestige Scholarship in Arts, and the R.J.T. Bell Prize in Mathematics. In 2016 he won an AustMS Lift-Off Fellowship. Recently he proved a topological characterisation of alternating knot complements, using properly embedded spanning surfaces, which answered an open question of Ralph Fox from the early 60s.

2017 J H Michell Medal Awarded to Dr Alys Clark

The 2017 J.H. Michell Medal is awarded to Dr Alys Clark from the University of Auckland. The J.H. Michell Medal has been awarded since 1999 to an outstanding new researcher within 10 years of their PhD, who has carried out distinguished research in applied or industrial mathematics, and where a significant proportion of the research work has been carried out in Australia and/or New Zealand.

Alys completed her undergraduate education at the University of Oxford and her postgraduate education at the University of Adelaide: a BA(Hons) in Mathematical Sciences in 2002, a M. Math. Sc (Applied Mathematics) in 2005 and a PhD in Applied Mathematics in 2009. In 2008 she joined the Auckland Bioengineering Institute, the University of Auckland, as a research fellow, becoming a senior research fellow in 2015. Alys works at the interface between mathematical modelling and the biological sciences with research interests in modelling the transport of nutrients in the complex and heterogeneous structures of the lungs, placenta and ovaries to guide clinicians in making medical decisions.

News from China

Inaugural National Innovation Award

On May 25, 2017, following the National Natural Science Award, State Technological Invention Award and National Science Progress Award, the National Innovation Award was jointly set up by the China Association for Science and Technology, Ministry of Human Resources and Social Security, Ministry of Science and Technology and State-Owned Assets Supervision and Administration Commission of the State Council. It is the second most prestigious award after the Highest National Science and Technology Awards.

The National Innovation Award is granted once every three years to reward researchers who have made outstanding achievements in innovation. The award grants medals to ten research teams and no more than 30 scientific and technical workers, each enjoying the benefits as model workers at the provincial and ministerial level. Certificates of Merit are also given out to not more than 300 workers in the field of science and technology.

Over 300 assessors were invited that included specialists, industry representatives and entrepreneurs, 157 of them being academicians. The assessors sat on 16 panels, divided by research, technological development, key equipment, project implementation, business entrepreneurship, science popularisation and social service.

This year, the award granted medals to 10 teams, 28 individuals and certificates of merit to 254 individuals, selected from a total of 1,343 scientists and 227 research teams through online review, preliminary evaluation and re-evaluation.

Algebraic Geometry Conference held at the Chinese Academy of Sciences

The Algebraic Geometry Conference was held at the Academy of Mathematics and System Sciences (AMSS) of the Chinese Academy of Sciences (CAS) from 23 to 27 October 2017. At the opening ceremony, Professor Yau Shing-Tung welcomed the international participants and expressed hope that they will continue to support the Morningside Centre of Mathematics and the development of Chinese mathematics.
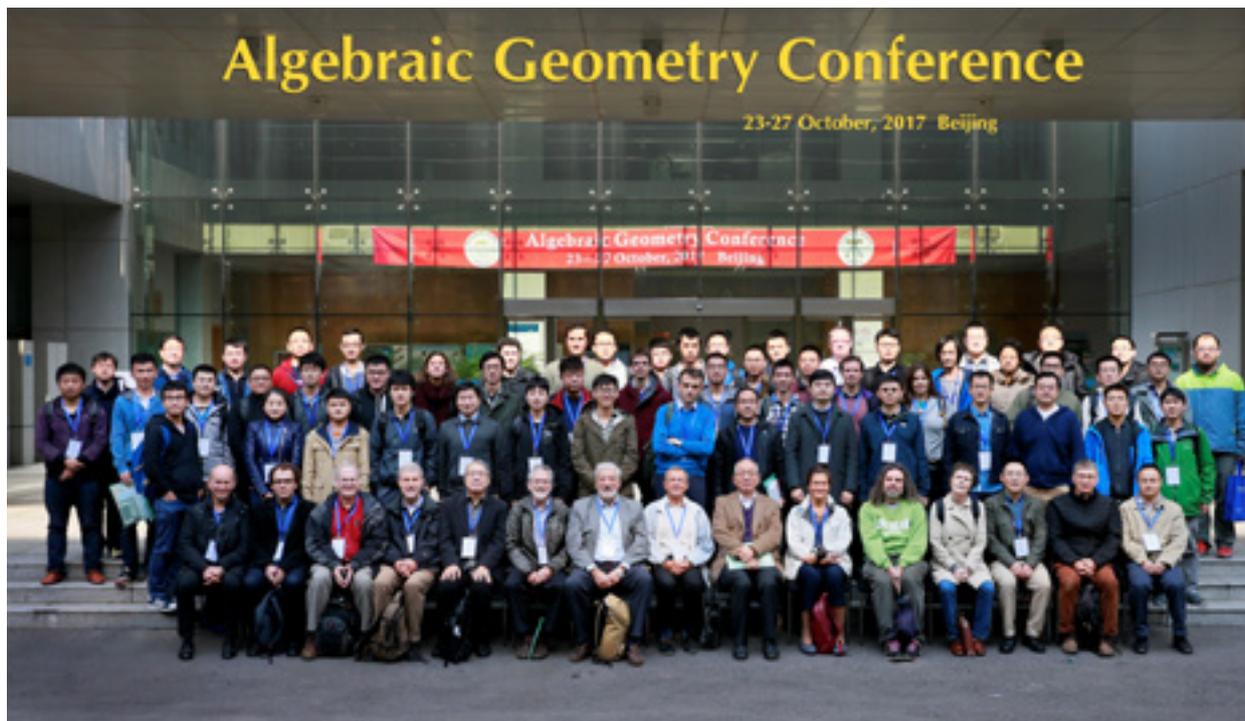
The conference had 18 invited speakers, with more than 80 participants including at least 16 ICM invited speakers. Among those in attendance were Claire Voisin of the Collège de France, Fabrizio Catanese of the University of Bayreuth, Yau Shing-Tung of the National Academy of Sciences, Robert Lazarsfeld of the American Academy of Arts and Sciences, Eduard Looijenga of the Royal Netherlands Academy of Arts and Sciences, Mok Ngai-Ming of the Chinese Academy of Sciences and Jun-Muk Hwang of the Korea Institute for Advanced Study.

The conference was successfully completed with the great support of Morningside Centre and Academy of Mathematics and System Sciences.

Professor Chenyang Xu Awarded 2017 Future Science Prize

On September 9, 2017, the 2nd Future Science Prizes were announced and the inaugural Mathematics and Computer Science Prize was awarded to Xu Chenyang, a professor at the Beijing International

Centre for Mathematical Research, in recognition of his significant contribution to algebraic geometry, especially in the field of birational geometry.

The other two awards, the Life Science Prize and the Physics Prize were respectively granted to Academician of the Chinese Academy of Sciences, Professor Shi Yigong of Tsinghua University School of Life Sciences and Professor Pan Jianwei of University of Science and Technology of China.

Xu is a world leader in the field of algebraic geometry. He returned to work at Beijing International Centre for Mathematical Research in 2011 and is now a Boya Chair professor at Peking University School of Mathematical Sciences. Xu won the 2016 ICTP Ramanujan Prize. He was selected as the Poincaré Chair 2017/2018 and was invited to speak at the 2018 International Congress of Mathematicians.

The Future Science Prize is the first Chinese non-governmental award established by scientists and business owners in 2016. The prizes are instituted to reward scientists who make outstanding scientific contributions in Greater China. Winners are not limited to Chinese nationals. The award seeks to promote basic scientific research in the Greater China Region, attract scientists around the world and encourage the growth of the scientific industry. Each winner is awarded 1 million US dollars. The awards are nominated by direct invitation and evaluated by outstanding researchers to ensure fairness and credibility of the award.

Liu Yi Awarded 2017 "Qiu Shi Outstanding Young Scholar Prize"

Liu Yi is awarded the Qiu Shi Outstanding Young Scholar Prize. Liu Yi is currently serving as researcher at the Beijing International Centre for Mathematical Research and a member of the Central Organisation Department's Thousand Talents Program. He received a bachelor's degree from the School of Mathematical Sciences at Peking University in 2006 and a PhD from the Department of Mathematics at the University of California at Berkeley in 2012. He was a Taussky-Todd lecturer at the California Institute of Technology Department of Mathematics from 2012 to 2015. His main research area is low-dimensional topology, the subject involving three-dimensional manifold and hyperbolic geometry. Liu Yi received the Herb Alexander Prize from the University of California, Berkeley, and was the recipient of a grant from the National Science Foundation during his time at Caltech. His academic papers have been published in some of the world's leading mathematical journals, such as Journal of American Mathematical Society, Inventiones Mathematicae, and Duke Mathematical Journal.

The Outstanding Young Scholar Award was established in 1995 to award outstanding young researchers who are engaged in the field of basic research in mainland China. In 2013, the Qiu Shi Foundation launched a new "Outstanding Young Scholar Award" project aimed at supporting domestic colleges and universities competing with overseas institutions to attract top talent, supporting young scholars who have just started an independent research project, aid universities in training young scholars with great potential and to cultivate leaders for the development of China's science and technology.

News from Hong Kong

The Shaw Prize in Mathematical Sciences 2017

The Shaw Prize in Mathematical Sciences 2017 is awarded in equal shares to János Kollár, Professor of Mathematics, Princeton University, USA and Claire Voisin, Professor and Chair in Algebraic Geometry, Collège de France, for their remarkable results in many central areas of algebraic geometry, which have transformed the field and led to the solution of long-standing problems that had appeared out of reach.

János Kollár

János Kollár is currently a Professor of Mathematics at Princeton University, USA. He obtained his Bachelor of Science from Eötvös Loránd University, Hungary in 1980 and his PhD from Brandeis University, USA

in 1984. He was a Research Assistant at the Hungarian Academy of Sciences (1980–1981) and Junior Fellow at Harvard University, USA (1984–1987). He joined the University of Utah, USA, where he was successively Associate Professor (1987–1990), Professor (1990–1994) and Distinguished Professor (1994–1999). From 1999, he moved to Princeton University, USA as Professor and was appointed Donner Professor of Science since 2009. He is a member of the US National Academy of Sciences and a Fellow of the American Academy of Arts and Sciences.

Kollár's most recent work stands out in a direction that will influence algebraic geometry deeply in the decades to come, as an important complement of the Minimal Model Program: the definition and study of moduli of higher-dimensional varieties, which can be thought of as sophisticated geometrical structures whose points represent equivalence classes of these varieties. The importance of this area can be seen in the immense wealth of papers on the moduli problem in dimension 1, which today occupies topologists, combinatorialists and, perhaps most of all, physicists. Already for surfaces the treatment of moduli is an extremely subtle and difficult problem. Kollár's ideas have almost defined the field of higher-dimensional moduli.

Claire Voisin

Claire Voisin is currently Professor, Algebraic Geometry Chair at Collège de France. She obtained a postgraduate teaching diploma in mathematics in 1983 and her PhD from Université Paris-Sud, France in 1986. She joined the Centre National de la Recherche Scientifique (CNRS) immediately after graduation in 1986 and continued her career there until 2016, and she was successively Researcher at the Université Paris-Sud in Orsay and then Senior Researcher and Directrice de recherche at the Institute de Mathematiques de Jussieu (CNRS/UPMC/Université Paris Diderot). She became a Professor at the Collège de France and has held the chair in Algebraic Geometry since 2016. She is a member of the Académie des sciences (France) and foreign associate member of the US National Academy of Sciences.

Among Voisin's major achievements is the solution of the Kodaira problem, which starts with the observation that every deformation of a complex projective manifold is a Kähler manifold (which roughly speaking means a geometric set that locally has a structure compatible with the complex numbers) and asks whether the converse is true. She found counterexamples: that is, Kähler manifolds that not only fail to be deformations of projective manifolds but are not even topologically equivalent to projective manifolds. Another of Voisin's pioneering accomplishments is the establishment a new technique for showing that a variety is not rational, a breakthrough that has led to results that would previously have been unthinkable. A third remarkable result is a counterexample to an extension of the Hodge conjecture, one of the hardest problems in mathematics (being one of the Clay Mathematical Institute's seven Millennium Problems); the counterexample rules out several approaches to the conjecture.

Michael Kwok-Po Ng selected for the 2017 Class of SIAM Fellows

Michael Kwok-Po Ng has been elected as one of 28 Society for Industrial and Applied Mathematics (SIAM) Fellows 2017 for fundamental contributions to algorithms for structured linear systems and image processing.

Michael Kwok-Po Ng, Hong Kong Baptist University, is Chair Professor in Mathematics and Chair Professor (Affiliate) in Computer Science; Head of Department of Mathematics, MSC Programme Director; Director of Centre for Mathematical Imaging and Vision. As an applied mathematician, Michael's main research areas include bioinformatics, data mining, operations research and scientific computing.

In 2017, Michael obtained the Feng Kang Prize for his significant contributions in numerical linear algebra for solving structured linear systems, mathematical and computational methods in image processing. In 2014, Michael obtained the Hong Kong Baptist University President's Awards for Outstanding Performance in Scholarly Work. Michael won the Honourable Mention of Householder Award IX in 1996 at Switzerland, an excellent young researcher's presentation at Nanjing International Conference on Optimization and Numerical Algebra, 1999, and the Outstanding Young Researcher Award of the University of Hong Kong, 2001.

News from India

2017 SASTRA Ramanujan Prize

Maryna Viazovska is awarded the 2017 SASTRA Ramanujan Prize for her stunning and elegant resolution of the celebrated sphere packing problem in dimension 8, the proof of which appeared in her paper in the Annals of Mathematics (2017), and for her joint 2017 paper in the Annals of Mathematics with Henry Cohn, Abhinav Kumar, Stephen D. Miller and Danylo Radchenko, which resolves the sphere packing problem in dimension 24 by building on her ideas in dimension 8. The prize also recognises her outstanding PhD thesis of 2013 at the University of Bonn in which she resolved significant cases of the Gross-Zagier Conjecture and her work prior to her PhD with A. Bondarenko and D. Radchenko resolving a long-standing conjecture of Korevaar and Meyers on spherical designs, that appeared in the Annals of Mathematics in 2013. The prize notes that the modular forms techniques developed by Viazovska will have a significant future impact in discrete geometry, analytic number theory, and harmonic analysis.

The SASTRA Ramanujan Prize was founded in 2005 by the Shanmugha Arts, Science, Technology & Research Academy (SASTRA) in Kumbakonam, India. It is awarded annually for outstanding contributions by young mathematicians to fields of research influenced by Srinivasa Ramanujan. As Ramanujan died at the age of 32, his namesake Prize has the same age limit for its candidates. The Prize will be awarded in December 21–22, 2017 at the International Conference on Number Theory at SASTRA University in Kumbakonam (Ramanujan's hometown) where the prize has been traditionally given each year.

Maryna Viazovska was born in Kiev in 1984. She received her BSc in Mathematics in 2005 at the Kyiv National Taras Shevchenko University, her masters from the University of Kaiserslautern (2007), and her PhD in 2013 from the University of Bonn. She is currently Chair of Number Theory at the École Polytechnique Fédérale de Lausanne (EPFL). Since then, she has received several awards and recognitions including the Salem Prize in 2016 and the Clay Research Award in 2017.

2017 ICTP Ramanujan Prize

The Ramanujan Prize has been awarded annually since 2005 to a researcher from a developing country who is less than 45 years of age on December 31 of the year of the award, and who has conducted outstanding research in a developing country. It was originally instituted by the International Centre for Theoretical Physics (ICTP), the Niels Henrik Abel Memorial Fund, and the International Mathematical Union (IMU). The participation of the Abel Fund ended in 2012; the Department of Science and Technology of the Government of India (DST) has now agreed to fund the Prize for a 5-year period, starting with the 2014 Prize.

The winner of the 2017 Ramanujan Prize for Young Mathematicians from Developing Countries is Eduardo Teixeira of the Federal University of Ceará, Brazil. The prize is in recognition of Teixeira's outstanding work in Analysis and Partial Differential Equations.

Teixeira started working on free boundary problems during his PhD thesis, proving existence and regularity results, and obtaining qualitative properties of solutions, in the theory of nonlinear heat conduction. Subsequently, in collaboration with L. Zhang, he obtained Almgren's type frequency formulas in Riemannian manifolds. He then introduced an original approach to the regularity of degenerate elliptic equations, which consists in viewing the set of critical points of a solution as a free boundary. This interesting point of view led him to prove the continuity conjecture for elliptic equations with high order singular structures, and in solving, in collaboration with Araujo and Urbano, a long-standing conjecture on the optimal regularity for the p-Laplacian in two-dimensions. Teixeira has contributed to many other aspects of the theory of nonlinear elliptic equations. A perfect example is his recent breakthrough, in collaboration with Y. Li and Z.-C. Han, on the asymptotic radial symmetry of solutions to the kth-order Yamabe equation in punctured domains, a deep and original contribution to the theory of conformally nonlinear elliptic PDEs.

The Prize is also in recognition of Professor Teixeira's determined pursuit of high-level research in his home institution in the northeast of Brazil, where over the last

decade he has founded and directed one of the major research groups in nonlinear PDEs in Latin America. It is hoped that his example will inspire mathematicians working at the highest levels while based outside main established centres of research.

The Infosys Prize 2017

The Infosys Prize 2017 in Mathematics is awarded to Prof. Ritabrata Munshi for his outstanding contributions to analytic aspects of number theory. Besides ingenious contributions to the Diophantine problem, he has established important estimates known as sub-convexity bounds for a large class of L-functions with methods that are powerful and original.

- **Congratulatory message from the Jury Chair — Srinivasa S R Varadhan**
  "Prof. Ritabrata Munshi has been recognised for his outstanding contributions to analytic number theory, particularly his work on subconvexity bounds for classes of L-functions. On behalf of the jury I want to congratulate him."

- **Bio**
  Prof. Ritabrata Munshi, received his undergraduate and early graduate education at the Indian Statistical Institute, Kolkata. He pursued his doctoral studies at Princeton University in the US with Sir Andrew Wiles. After receiving his PhD he spent a few post-doctoral years in the US before returning to India to join the Tata Institute of Fundamental Research. He is currently on lien to ISI, Kolkata.

  Munshi's work encompasses analytic number theory, with important contributions to the subconvexity problem, analytic aspects of L-functions and automorphic forms as well as Diophantine equations.

  He is the recipient of many awards including the Birla Science Prize (2013), Shanti Swarup Bhatnagar Prize (2015), and the ISI Alumni gold medal. Prof. Munshi was elected a Fellow of the Indian Academy of Sciences in 2016.

  He has been recognised for his work with an invitation to speak at the International Congress of Mathematicians to be held at Rio de Janeiro in 2018.

- **Scope and Impact of Work**
  Prof. Ritabrata Munshi is an outstanding math-

ematician working in the analytic side of number theory. He has made very important contributions to the analytic theory of L-functions, in particular to the subconvexity problem for higher rank L-functions. He has also done very ingenious work (notably with T D Browning) on applying analytic methods in the study of Diophantine problems.

An important problem in number theory is to understand the values of zeta and L-functions on the critical line. There is a general bound for these values that follows from the Phragmen–Lindelöf principle and this is known as the trivial or convexity bound. Improving the convexity bound is known as the subconvexity problem, and this has formed the basis of intensive investigation especially over the last 25 years. The Generalised Riemann hypothesis implies the Lindelöf hypothesis, and this may be seen as the optimal result in the subconvexity problem.

In a series of beautiful papers, Munshi made remarkable progress on this problem going beyond the known cases for Dirichlet L-functions and L-functions arising from cusp forms on GL(2). He developed an ingenious method based on the Hardy–Littlewood circle method (one can see here the influence of his work on Diophantine problems!) which produced a breakthrough and decisive results in the subconvexity problem for GL(3).

- **Citation by the Jury**

  Ritabrata Munshi is a very original and powerful mathematician working primarily in the field of analytic number theory. His work is in the tradition of the celebrated work of Riemann which revealed unexpected and deep connections between analysis and prime numbers through his study of the Riemann zeta-function.

Prof. Munshi has developed a very novel method for proving certain subconvex estimates for L-functions on their critical lines, and he has demonstrated the effectiveness of his powerful, new method in many cases of L-functions arising from cusp forms on higher rank groups, by going well beyond what other methods yield. Such estimates are fundamental to many striking applications of the theory of L-functions.

Munshi has worked across the breadth of analytic number theory, ranging from applying analytic number theory to Diophantine problems, to making remarkable progress in modern analytic number theory related to L-functions arising from automorphic forms.

News from Japan

MSJ Autumn Meeting 2016

The MSJ (Mathematical Society of Japan) Autumn Meeting 2016 was held during September 15–18 at Kansai University, Suita City, Osaka.

The MSJ Spring and Autumn Meetings are the most important activities of the MSJ. They help the members exchange scholarly information and play a crucial role in the development of mathematics in Japan.

The meeting organised two plenary talks:

- "Cohomology theory of mapping class groups and outer automorphism groups of free groups" by Dr. Shigeyuki Morita, Professor Emeritus of The University of Tokyo and Tokyo Institute of Technology
- "Rational curves on algebraic varieties — minimal models and extremal rays" by Dr. Shigefumi Mori, Distinguished Professor of Kyoto University

Shigeyuki Morita

Dr. Morita's talk was the award talk for The MSJ Autumn Prize. The talk by Dr. Mori commemorated the 70th anniversary of MSJ.

In addition to the above talks, the meeting also organised 7 featured invited lectures. Moreover, the 10 Research Sections organised 32 invited talks and 412 short communications of research papers.

The MSJ Autumn Prize winner for 2016 was announced and awarded to Dr. Shigeyuki Morita at the meeting. The prize presentation ceremony was held on September 16. The 2016 MSJ Takebe Katahiro Prizes and The 2016 MSJ Takebe Katahiro Prizes for Encouragement of Young Researchers were also presented at the meeting.

The MSJ and Kansai University jointly organised two Open Lectures for Citizens. The lectures were aimed at non-professional audience. The titles and the speakers are the following.

- "On differential and integral calculus of non-integer order" by Dr. Nobumasa Sugimoto, Professor Emeritus of Osaka University and Professor of Kansai University
- "Development and perspective of mathematics" by Dr. Toshikazu Sunada, Professor Emeritus of Tohoku University and Professor of Meiji University

Dr. Sunada's talk was delivered in commemoration of the 70th anniversary of MSJ.

The 2016 MSJ Autumn Prize

The 2016 MSJ Autumn Prize was awarded to Dr. Shigeyuki Morita, Professor Emeritus of The University of Tokyo and Tokyo Institute of Technology, for outstanding contributions to work on cohomology theory of mapping class groups and outer automorphism groups of free groups. The MSJ Autumn Prize and The MSJ Spring Prize are the most prestigious prizes awarded by the MSJ to its members.

The 2016 MSJ Analysis Prizes

The 2016 MSJ Analysis Prizes were awarded to Dr. Soichiro Katayama of Osaka University for studies on null structure in systems of nonlinear hyperbolic partial differential equations; to Dr. Shigeaki Koike of Tohoku University for work on the theory of L_p-viscosity solutions for fully nonlinear elliptic and parabolic partial differential equations; and to Dr. Tomohiro Sakamoto of Tokyo Institute of Technology for studies on nonequilibrium stochastic dynamical systems by exact solutions.

The 2016 MSJ Geometry Prizes

The 2016 MSJ Geometry Prizes were awarded to Dr. Teruhiko Soma of Tokyo Metropolitan University for a series of works on 3-manifold theory; and to Dr. Shigeharu Takayama of The University of Tokyo for the algebro-geometric study of birationality of pluricanonical maps of algebraic varieties of general type.

The 2016 MSJ Takebe Katahiro Prizes

The 2016 MSJ Takebe Katahiro Prizes were awarded to Norihisa Ikoma of Kanazawa University for work

on variational and non-variational approaches for nonlinear elliptic problems; to Takefumi Nosaka of Kyushu University for work on algebraic topology of quandles and low dimensional manifolds; and to Makoto Yamashita of Ochanomizu University for operator algebraic studies on quantum groups. The Takebe Katahiro Prize is set up for young researchers who have obtained outstanding results.

The 2016 MSJ Takebe Katahiro Prizes for Encouragement of Young Researchers

The 2016 MSJ Takebe Katahiro Prizes for Encouragement of Young Researchers were awarded to:

- Ken Abe of Kyoto University for work on the analysis of the Navier–Stokes equations by maximum norm;

- Yoshihiro Abe of Kobe University for detailed estimates on cover times and local times of random walks on graphs;

- Takahiro Oba of Tokyo Institute of Technology for work on contact manifolds and their Stein fillings;

- Ryo Kanda of Osaka University for work on atom spectra of Grothendieck categories;

- Yu Kitabeppu of Kyoto University for work on geometry of spaces with Ricci curvature bounded below;

- Yuta Wakasugi of Nagoya University for studies on the asymptotic behaviour of solutions to damped wave equations.

The Takebe Prize for the Encouragement of Young Researchers is intended for young mathematicians who are deemed to have begun promising careers in research by obtaining significant results.

Hiraku Nakajima received the Asahi Prize

Dr. Hiraku Nakajima, Professor of Kyoto University, received the 2016 Asahi Prize for his research in geometric representation theory.

The Asahi Prize was established in 1929 to commemorate the 50th anniversary of The Asahi Shimbun's inception. The prize is awarded to individuals and groups that have made outstanding accomplishments in the fields of academics and arts and have greatly contributed to the development and progress of Japanese culture and society at large.

MSJ Spring Meeting 2017

The MSJ Spring meeting 2017 was held at Tokyo Metropolitan University, Hachioji City, Tokyo during March 24–27. The chair of organising committee is Dr. Teruhiko Soma and the chair of executive committee is Dr. Hiroo Tokunaga. The official website of the meeting is at http://mathsoc.jp/en/meeting/tmu17mar/.

The 19th Takagi Lectures

The 19th Takagi Lectures was delivered at Kyoto University, Kyoto, during July 8–9. The titles and speakers of the invited talks are the following:

- Mark Braverman (Princeton University), "Information Complexity and Applications"

- Hugo Duminil-Copin (Institut des Hautes Études Scientifiques), "Sharp Threshold Phenomena in Statistical Physics"

- Roger E. Howe (Yale University), "Duality and Rank in Representation Theory"

The official website of the lectures is at: http://www.ms.u-tokyo.ac.jp/~toshi/jjm/JJM_HP/contents/takagi/19th/index.htm

News from Korea

2017 Korean Mathematical Society Awards

Professors Jihun Park (POSTECH) and Ji Oon Lee (KAIST) were honoured with 2017 KMS Excellent Research Paper Awards for "Ivan Cheltsov and

Jihun Park   Ji Oon Lee

Jihun Park, Birationally rigid Fano threefold hypersurfaces, Mem. Amer. Math. Soc. 246 (2017), no. 1167, 1–117" and "Ji Oon Lee and Jun Yin, A necessary and sufficient condition for edge universality of Wigner matrices, Duke Math. J. 163 (2014), no. 1, 117–173", respectively.

2017 KMS Academic Achievement Awards were given to Professors Dong-Soo Kim (Chonnam National University) and Seok-Zun Song (Jeju Nation-

Dong-Soo Kim   Seok-Zun Song

al University) in recognition of outstanding achievements in the field of geometry and the field of algebra, respectively.

Professors Jeaman Ahn (Kongju National University) and Yong Su Shin (Kongju National University) received 2017 KMS Excellent Domestic

Jeaman Ahn   Yong Su Shin

Paper Award for "The minimal free resolution of a star-configuration in and the weak Lefschetz property, J. Korean Math. Soc. 49 (2012), no. 2, 405–417".

2017 KMS Sangsan Prizes for Young Mathematicians, which is intended to acknowledge talented young researchers in mathematics with 5 years or

Se Jin Oh   Young-Pil Choi

less of experience after doctoral degrees, were awarded to Professors Se Jin Oh (Ewha Womans University) and Young-Pil Choi (Inha University).

Professor Young-Hoon Kiem (Seoul National University) was the winner of 2017 KMS DI Prize for Mathematicians which is awarded to mathematicians greatly contributed to the development of Mathematics in Korea.

Young-Hoon Kiem

2017 Annual Meeting of Korean Mathematical Society

2017 KMS Annual Meeting was held at Dankook University (Cheonan) from October 27th to 29th. 351 people registered and 150 non-registered visitors attended this Annual Meeting and 129 papers were presented in plenary lectures, invited lectures, contributed talks, poster sessions, and special sessions together with 2 public lectures and 1 panel discussion.

Professor In Kang Kim (KIAS) delivered a KIAS plenary lecture on "Topology, group action and geometry". A special invited lecture was given by Professor Jann-Long Chern (National Central University, Taiwan) with the title of "On the Hardy–Sobolev type elliptic equations with multiple boundary singularities and Caffarelli–Kohn–Nirenberg inequality". Professor Jihun Park (POSTECH, the winner of 2017 Excellent Research Paper Award), Dr. Sung-Jin Oh (KIAS), Professor Hyunsuk Kang (GIST), Professor Se-Goo Kim (Kyung Hee University), Professor Ji Oon Lee (KAIST, the winner of 2017 Excellent Research Paper Award), Dr. Dong-wook Shin (Yonsei University), Emeritus Professor Yong Woon Kim (Hanyang University), Professor Sang June Lee (Duksung Women's University), Professor Hyung Tae Lee (Chonbuk National University) offered invited lectures.

Professor Jon-Lark Kim (Sogang University) gave a KIAS public lecture on "From mathematical games to Artificial Intelligence". There was Mathematical Concert consisting of two parts. In the first part, Professor Ha Young Kim (Ajou University) delivered a public lecture on "Introduction to Deep Learning and Its Applications". In the second part, there was a panel discussion or a chatter, 'Maybe not-so-useful, yet jolly math chat', given by 5 professors in mathematics, a director of Science with people, and a researcher on mathematics.

Industrial Mathematics Center

Two centers on industrial mathematics were established this year in Korea. One is "Industrial and Mathematical Data Analytics Research Center (IMDARC, Seoul National Univ.)" whose director is Professor Jung Hee Cheon and the other is "Finance·Fishery·Manufacture Industrial Mathematics Center on Big Data (MIMC, Pusan National University)" with Professor Hyun-Min Kim as the director.

IMDARC plans to do researches on security and analysis of information and theory of predictive model to solve medical, legal, financial problems. MIMC will solve problems in the fields of finance, fishery and manufacture and develop mathematical models converged with technologies such as ICT, AI etc.

Korea Placed First Overall in the 58th International Mathematical Olympiad (IMO)

Korea placed first overall in the 58th IMO held in Reo de Janeiro, Brazil, with 6 gold medals and total of 170 points.

In particular, Dain Kim joined in the Korean national team for IMO as a female student. That was the first time in 11 years. And she was the only female gold medalist among 62 female students.

Conference

There will be a joint meeting of Korean Mathematical Society (KMS) and Deutsche Mathematiker-Vereinigung (DMV) during 3–6 October 2018 at COEX, Seoul, KOREA.

New from Vietnam

I. **Upcoming Events:**

1. Workshop-Conference on Earthquakes and Tsunami: Modeling and Observations

Date: 11–22 December 2017

Venue/Location: VIASM, Hanoi

Organisers:

- Prof. Nguyen Huu Du (Director of VIASM)

- Dr. Abdelkrim Aoudia (Head of Earth Solid Physics, ICTP)

- Prof. Pham Chi Vinh (Faculty of Mathematics-Mechanics-Informatics, VNU Hanoi University of Science)

- Dr. Nguyen Xuan Anh (Director of Institute of Geophysics)

Purpose:

The two-week international school will start with an international conference that will highlight some of the latest development in earthquake sciences with emphasis on the seismotectonics and hazards from earthquakes and tsunami in Vietnam and surroundings. The school will bring together international experts and train Master & PhD students and early career scientists so that each has a better understanding of the range of circumstances and knowledge related to earthquakes in Vietnam and surrounding countries. The aim is to raise national capability in the vulnerable countries, through training and establishing an international network of scientists on which those countries can call to increase their resilience. The programme will involve a series of lectures, seminars, discussions in Earthquake and Tsunami modeling. For those interested in presenting their research work during the conference (oral and poster) an abstract should be uploaded directly to the online application.

Topics:

- Theoretical Seismology

- Observational and Computational Seismology

- Mechanics of Earthquakes and Faulting

- Earthquake Hazard

- Tsunami Physics and Hazard

Host Institutions:

- International Centre for Theoretical Physics (ICTP, Trieste, Italy)

- Vietnam Institute for Advanced Study in Mathematics (VIASM)

- National Foundation for Science and Technology Development (NAFOSTED)

- VNU Hanoi University of Science

- Institute of Geophysics (IGP), Vietnam

Email: smr3165@ictp.it

Website conference: http://viasm.edu.vn/en/hdkh/etmo2017

2. Mini-course "Special Topics for Classical Damped Wave Models"

Lecturer: Prof. M. Reissig (Faculty of Mathematics and Computer Science Technical University Bergakademie Freiberg, Germany)

Date & Time: 22, 24 & 30 November 2017, 9:00 – 11:30

Location: VIASM Lecture hall B4

Content:

1. Phase space analysis for classical damped wave models

First we derive representations of solutions by using Fourier multipliers.

This allows to discuss decay behaviour and decay rate of the wave type energy. Moreover, we explain the influence of additional regularity in the data. One of the most important properties is described by the so-called diffusion phenomenon for damped wave models.

We explain this phenomenon. Some conclusions complete the first part of lectures.

2. Semilinear classical damped wave models

We begin with explanations of the Fujita exponent as the critical exponent in semilinear heat models. Then we show that this exponent is critical in semilinear classical damped wave models with power nonlinearity, too. Stability of the zero solution is proved by using decay estimates for solutions to parameter-dependent Cauchy problems, Duhamel's principle and a fixed point argument. The optimality of the critical exponent is proved by applying the test function method. This implies blow-up (in finite time) of weak solutions even for small data.

3. Fujita via Strauss — a never ending story

First we recall the story of the Strauss exponent appearing as the critical exponent in semilinear wave models. We introduce Kato's lemma as an important tool to prove blow-up results. Finally, we introduce recent results for some semilinear wave models with power nonlinearity and with scale invariant mass and dissipation. These models are taken from a grey zone, where an interaction of Fujita and Strauss critical exponents appears.

II. Past Events

1. Workshop on Stochastic Dynamical Systems

The first workshop on probability theory "Stochastic Dynamical Systems" was held in Tuan Chau from 10th to 15th of July 2017. It was jointly organised by VIASM, Prof. Jean-Stéphane Dhersin (University Paris 13 & LIA Formath Vietnam, France) and Prof. Marc Peigné (University Fr. Rabelais Tours, France). More than twenty researchers coming from all parts of Vietnam, from south to north, and also five researchers coming from France attended the workshop.

There were two advanced courses on stochastic dynamical systems, given by Prof. Sara Brofferio (University of Paris Saclay) and Prof. M. Peigné. Several participants of this workshop also had the opportunity to share their new ideas in the research field. It was the occasion to see the variety of the topics in probability theory studied in Vietnam. This kind of meetings is very important for researchers to share their works, open themselves to new problems and discover new approaches. All the participants really hoped that this conference was the first one of a series of annual appointments to be organised in the future.

2. Workshop "Stochastic Processes — Actuarial Science and Finance"

The workshop "Stochastic Processes — Actuarial Science and Finance" has gathered specialists of probability theory, who were working on applications in finance and insurance. Many scientific exchanges were done between participants all over the world: China, France, Germany, United Kingdom, Singapore, Turkey and Vietnam. It was jointly funded by VIASM, DAMI chair and Actinfo chair. Main topics presented in this workshop were stochastic processes, optimal control theory, principal-agent models, practical problems and professional needs for probabilistic models, risk measures, queueing theory, Markovian systems and investments in finance and insurance.

More information about the topics, abstracts and participants is available on the workshop website, http://viasm.edu.vn/en/hdkh/stochastic-processes-actuarial-science-and-finance

3. LSAM 2017: Control of Nonlinear Systems

The second lectures of LSAM 2017: "**Control of nonlinear systems**" by Prof. Jean-Michel Coron (Université Pierre et Marie Curie, France) was held on August 14, 15 and 18, 2017.

Prof. Jean-Michel Coron is a French mathematician. He had previously worked in the field of non-linear functional analysis, where he also obtained significant results. He was awarded numerous prizes — the Fermat prize in 1993, the Jaffé prize in 1995 by the Académie des Sciences, the Dargelos prize in 2002 and the ICIAM Maxwell prize in 2015.

Thanks to the cooperation and support from Viet Capital Bank and the international prestige of Prof. Ngo Bao Chau in particular, as well as the VIASM's international position in general, the lecture series of LSAM 2017 has been given by two prominent professors in applied mathematics. The second lectures was about the controllability problem and the stabilisation problem.

One of the main problems in control theory is the controllability problem. The controllability problem is to see if, by using some suitable controls depending on time, one can move from the given situation to the prescribed target. We first recall some classical results for finite dimensional control systems and then explain why the main tool used for classical problem in finite dimension is difficult to use for many important control systems modeled by partial differential equations. We present methods to avoid this difficulty.

Prof. Jean-Michel Coron giving his lecture

Another important problem in control theory is the stabilisation problem. We start this lecture by giving some historical feedbacks. Then we consider the link between controllability and stabilisation and show the usefulness of periodic time-varying feedback laws. We also consider the case where only part of the state is measured and present some tools to construct explicit stabilising feedback laws. A special emphasise is put on control of systems modeled by hyperbolic systems in one space dimension, which appear in various real life applications. We study the two previous problems when the control is on the boundary. In particular, we show how to construct explicit stabilising feedback laws.

4. VIASM Annual Meeting 2017

VIASM Annual Meeting 2017 was held on August 19, 2017. This annual event of VIASM is following Bourbaki seminars and this is the fourth in the Insitute series (since 2012).

For the series, VIASM often invite highly reputed mathematicians to deliver lectures on central topics of contemporary mathematics. The lecturers provide the audience with most interested problems in their research fields, main ideas and main results. The lectures are published in a special issue of *Acta Mathematica Vietnamica*.

This year, the speakers are Pierre-Henri Chaudouard (Université Paris 7 - Denis Diderot, France), Hoài-Minh Nguyễn (EPFL, Switzerland), Johannes Nicaise (Imperial College London, UK), Yiannis Sakellaridis (Rutgers University at Newark, USA) and Bernd Sturmfels (University of California at Berkeley, USA and Director of the Max Planck Institute for Mathematics in the Sciences Leipzig, Germany).

The series usually attracts prominent Vietnamese mathematicians and researchers from various institutes and universities in Vietnam. It is said from the first session of this year meeting that there are more young Vietnamese audience and they are more active as well as having a very good discussion with the speakers. This year meeting attracts more than 60 participants.

Prof. Bernd Sturmfels giving his lecture at VIASM Annual Meeting 2017

5. Conference on Automorphic Forms and Related Topics

The Conference on Automorphic Forms and Related Topics was organised in four days, from August 21–24, 2017, in Tuan Chau, Quang Ninh. There were 22 participants attending the conference, among them are few master students and young PhD students.

Thirteen experts from Vietnam, France, USA, Singapore, Japan, India and China had given excellent lectures at the conference. The lectures covered recent development in the field such as extension of Gross-Prasad conjecture, Unipotent representation of real classical groups, Singularities of the arc spaces, Fourier transformations over finite fields, Basic functions, Affine group schemes over DVRs, Mixed motives in the cohomology of A_g, Relative functoriality conjectures, etc.

All information was updated at: http://viasm.edu.vn/en/hdkh/af2017
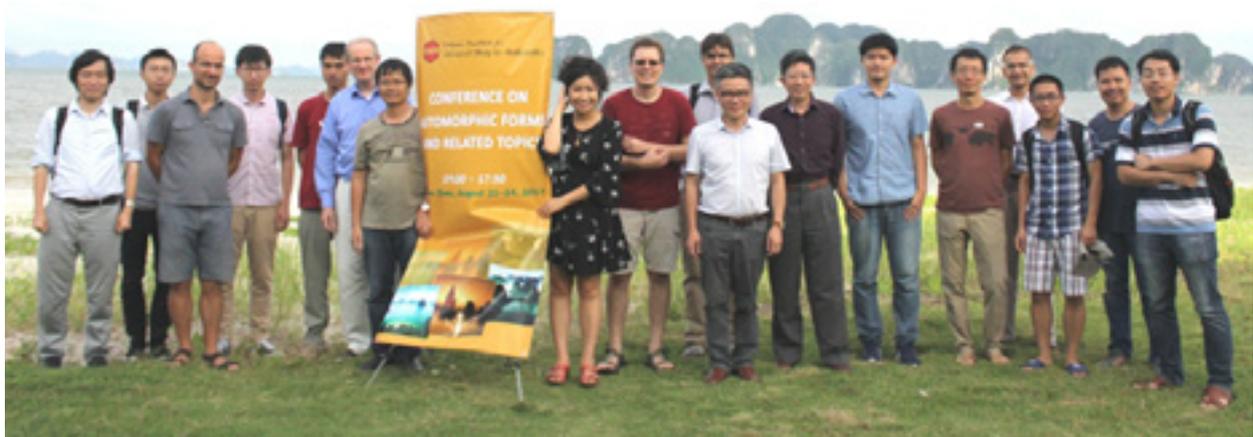
Participants of the conference in Tuan Chau, Quang Ninh province