

Department of Mathematics

An online publication for Mathematics Students & Alumni (Issue 4/Jan-July 2013)

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News & Events

An unprecedented high number of invitations to speak at the top mathematics congress puts NUS Department of Mathematics together with the best of its peers internationally. This achievement highlights the quality of our mathematics faculty who have done themselves, the Department, NUS and Singapore proud!

The Department of Mathematics at the NUS Faculty of Science is honored to have four Professors invited to present a 45-minute lecture each at the prestigious International Congress of Mathematicians (ICM) 2014 to be held in Seoul, South Korea.

The four Professors are Bao Weizhu, Gan Wee Teck, Shen Weixiao and Yu Shih-Hsien.

In addition, Professor Shen Zuwei has been invited to present a one-hour lecture at the 8th International Congress on Industrial and Applied Mathematics (ICIAM), which will be held in Beijing, China in 2015.

The International Congress of Mathematicians (ICM) is the largest international congress in the mathematics community. Its long and illustrious history stretches over more than a century. It is held once every four years under the auspices of the International Mathematical Union (IMU). Four of the top prizes in mathematics: The Fields Medals, the Nevanlinna Prize, the Gauss Prize, and the Chern Medal are awarded during the opening ceremony on the first day of the congress. With thousands of participants and the announcement of the prestigious prizes, every ICM is the focus of the mathematical world and a highlight on the mathematical calendar.

The selection process for invited speakers to ICM is extremely rigorous. Nominations received worldwide are channeled to selection committees for individual sub-disciplines comprising of preeminent experts in the whole world. In each sub-discipline, only a handful of mathematicians are invited to give 45-minute presentations. To be an ICM invited speaker is to be recognized by one's peers to be



From left to right: Professors Gan Wee Teck, Shen Weixiao, Yu Shih-Hsien and Bao Weizhu

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among the very top experts in one's own discipline in the whole world. It is a singular honor that is widely acclaimed by the mathematical community as a mark of excellence. The Department of Mathematics heartily congratulates our colleagues on their achievement.

About ICM

The International Congress of Mathematicians (ICM) is the largest international congress in the mathematics community with a history dating back over one hundred years. It is held once every four years under the auspices of the International Mathematical Union (IMU). The event also recognises the work of mathematicians and honors deserving researchers with the Fields Medals, the Nevanlinna Prize, the Gauss Prize and the Chern Medal. The awards are given during the opening ceremony on the first day of the congress. Each congress is memorialized by printed proceedings recording academic papers based on invited talks intended to reflect the current state of the science.

About ICIAM

The International Congress on Industrial and Applied Mathematics (ICIAM) is an international congress in the field of applied mathematics held every four years under the auspices of ICIAM which is a worldwide organisation for professional applied mathematics societies and for other societies with a significant interest in industrial or applied mathematics. The Council works to advance the applications of mathematics in all parts of the world. In each ICIAM, only 27 applied or industrial mathematicians are invited to give one hour lecture. To be an ICIAM one-hour invited speaker is to be recognised by one's peers to be among the very top experts in industrial and applied mathematics. The event also recognises the work of industrial and applied mathematicians and honors deserving researchers with the Collatz Prize, the Lagrange Prize, the Pioneer Prize, and the Su Buchin Prize.

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Provost's Chair Professorships

In recognition of their outstanding research achievements, including their invitation to ICM2014, the university has appointed Professors Bao Weizhu, Gan Wee Teck and Yu Shih-Hsien as Provost's Chair Professors.

The Provost's Chair appointments are for a three-year term with effect from 1 July 2013, and are awarded to selected faculty members of Professorial level, in recognition of their outstanding and impactful scholarly accomplishments which are internationally acknowledged.

Joining them in receiving this honour is Professor Steven Kou. Professor Kou joined the Department of Mathematics in June 2013. Professor Kou is recognized by many top experts as one of the very best in the research area of Financial Mathematics/Engineering.

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A Tribute to our Faculty Members

Professor Lee Seng Luan

On the occasion of Professor Lee's retirement on 30 June 2013, we would like to thank him for his valuable contributions to the department and faculty, and wish him a fun-filled and relaxing retirement.

Professor Lee joined the Department of Mathematics in 1987 as an Associate Professor. Prior to joining NUS, his previous appointment was as a Professor at the Universiti Sains Malaysia, Penang where he had worked for twelve years. He was promoted to Professor in NUS in 1997.

Throughout his 26-year career, Professor Lee served the Department and Faculty in various important roles, with his key administrative roles being the Deputy Head from 1 July 1996 to June 2000, and the Head from 2000 to 2006. He was a member of the Management Board, Institute for Mathematical Sciences, NUS, from 2001 to 2006, as well as a member of the Faculty Promotion and Tenure Committee from 2006 to 2008.



A blast from the past ~ Professor Lee when he first joined the department.

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After stepping down as Head in July 2006, Professor Lee took on an important administrative role as the Director of the Department's new Masters Programme in Quantitative Finance.

Professor Lee's research centers around Wavelets and its applications in approximation and Information Processing. One of his greatest achievements was his effort in setting up the Wavelets Strategic Research Programme in 1996, which subsequently developed into the Centre for Wavelets, Approximation and Information Processing. For his research work on wavelets, he and his team comprising Shen Zuwei and Wayne Lawton, were jointly awarded the National Science and Technology Award in 1998 (now known as the ASTAR's President Science & Technology Award).



Professor Jon Berrick

We thank Prof Berrick for his contributions to the Department and wish him all the best as he embarks on an exciting new chapter of his career at NUS-Yale College from 1 July 2013. Prof Berrick concurrently holds a courtesy appointment as Professor at our Department.

Professor Berrick joined the Department of Mathematics in 1981 and became Professor in 1996. He had previously held faculty positions at Oxford and Imperial College London. Professor Berrick received his undergraduate degree (Hons I) from Sydney University and his PhD from Oxford University. He is the recipient of a number of awards, including A*Star National Science Award and NUS Science Faculty Outstanding Scientist and Teaching Excellence Awards, and has received numerous international invitations for visiting professorships, as principal speaker at conferences, and other scholarly activities.



Professor Berrick specializes in algebraic topology and K-theory. He has authored or co-authored three books, and edited several others. He has published over sixty articles, most recently in Journal of the American Mathematical Society, Mathematische Annalen, American Journal of Mathematics, Transactions of the American Mathematical Society, Proceedings of the London Mathematical Society and Journal für die Reine und Angewandte Mathematik.

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Welcome on board!



Professor Steven Kou **Director, Centre for Quantitative Finance**

Professor Kou is recognized by many top experts as one of the very best in the research area of Financial Mathematics/Engineering. Professor Kou is internationally known for Kou's Jump Diffusion Model in Option Prices. His most important works are on modeling jumps in asset pricing for equity, credit, and fixed income markets, risk measures and Basel accords, and pricing of path-dependent options.

Prof Kou will also helm the Centre for Quantitative Finance (CQF) as its Director.

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Dr Zhou Chao, Assistant Professor

Dr Zhou obtained his PhD in Applied Mathematics in 2012 from Ecole Polytechnique under the supervision of Prof Anis Matoussi.

Prior to joining us, Dr Zhou held a temporary teaching and research position in the Department of Mathematics at the University of Maine in France.

His research interests are stochastic analysis and financial mathematics. He has recently been working on second order backward stochastic differential equations and their applications in finance.



Dr Tran Vu Khanh, Visiting Fellow

Tran Vu Khanh completed his Ph.D. in Mathematics at the University of Padova (Italy) in February 2010. After that, he was a lecturer at the University of Science in Ho Chi Minh City, Vietnam.

Prior to joining us, he was a postdoc at the University of Padova (Italy). Dr. Khanh's research interests include Several Complex Variables, PDEs, Geometry Analysis, Harmonic Analysis, and Inverse Problems. His research papers were published in highly prestigious journals such as *Inventiones Mathematicae*, *Advances in Mathematics* and *Journal of Functional Analysis*.

Dr. Khanh was awarded the 2011 Mathematical Prize from the Institute of Mathematics in Hanoi, Vietnam for his particularly outstanding achievements in mathematics.