E-NEWS

FOR MATH STUDENTS & ALUMNI

— Staying in touch with You —

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NEW APPOINTMENT OF HEAD OF DEPARTMENT

Professor Toh Kim Chuan

Professor Toh *(Leo Tan Professor in Science) will assume his position as Head, Department of Mathematics from 1 July 2020.*

A widely recognised scholar in the computational optimisation community, Prof Toh has won many honours and awards, including the 2017 INFORMS Optimization Society Farkas Prize, the 2018 NUS University Research Recognition Award and Mathematical Optimization Society Beale-Orchard-Hays Prize, as well as the 2019 President's Science Award (Singapore).

He is also an elected Fellow of the Society of Industrial and Applied Mathematics (Class of 2018).

Prof Toh was Deputy Head for Research from July 2012 to June 2020.

Appreciation

Professor Zhu Chengbo will relinquish his position as Head, Department of Mathematics after six years of dedicated service and contributions.

Thank you, Prof Zhu!

Under Prof Zhu's stewardship, the Department has been successful in a number of fronts including education programmes and faculty recruitment.

Several initiatives (such as Oppenheim Lectures, Peng Tsu Ann Assistant Professorship, ASEAN Mathematician Visit Programme) were launched during his tenure and the Department has continued to grow in stature and international recognition.

Prof Zhu, an accomplished mathematician in representation theory, will remain as a faculty member of the Department.

Inaugural Oppenheim Lecture 2015

From left: NUS President Prof Tan Eng Chye, Emeritus Prof Louis Chen, Speaker Prof Ngô Bảo Châu (Fields Medalist 2010) and Prof Zhu Chengbo
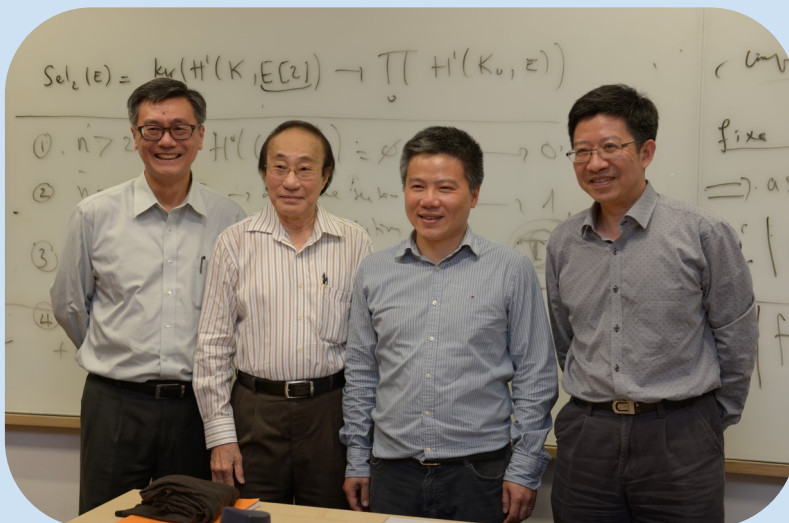
New Education Leaders Appointed

Congratulations to our colleagues who will be taking on leadership roles at the university

From left: Prof Shen Zuowei, Prof Sun Yeneng and Prof Goh Say Song will take on new leadership appointments from 1 April 2020

Professor Shen Zuowei, will be appointed the Vice Provost (Graduate Education) from 1 July. In his new role, he will focus on strategic transformation and management of postgraduate programmes, leveraging his extensive education-related experiences. He will concurrently be Dean of Science until 30 June .

Professor Sun Yeneng will be appointed Dean-Designate of Faculty of Science from 1 April, and will take on the mantle of Dean with effect from 1 July.

Professor Goh Say Song, Vice-Dean (Outreach and Admissions) at the Faculty of Science has been appointed concurrently as Dean-Designate of the Office of Admissions from 1 April 2020.

He will assume the role of Dean of Admissions from 1 July.

We wish them the very best in their new roles at the university.

Read more on next few pages, where we chat with Prof Shen, Prof Sun and Prof Goh .

Chat with Prof Shen Zuowei

What inspired you to pursue a career in mathematics?

I have always liked mathematics and enjoyed working on mathematical problems since young. I chose mathematics as my career because it is my area of interest and strength. If you choose your career according to your interest and strength, you will enjoy what you do and not give up when things get tough; you won't mind the long hours of hard work. Also, you are more likely to perform well, since you are doing what you are good at. If you are able to align your career with your interests and strength, then you will find that both life and work become enjoyable and meaningful. I made a wonderful choice.

What were some of the challenges you have faced in your academic career?

As an applied mathematician, the challenges I faced when I started my career were to figure how to formulate a mathematical model from concrete applications, develop theory and algorithms for analysis and computation, and then apply them back to applications. The difficulty is also to move beyond mere application to further fundamental theory and push interdisciplinary boundaries. This needs broad knowledge of mathematics, science and technology, and more importantly, this requires one to be able to bridge different fields with your own insights. Discussions and collaborations with experts in different fields are important, but, how to collaborate with others who have different background to yours is an art. I really enjoy working with different people and have learnt a lot from many of my collaborators.
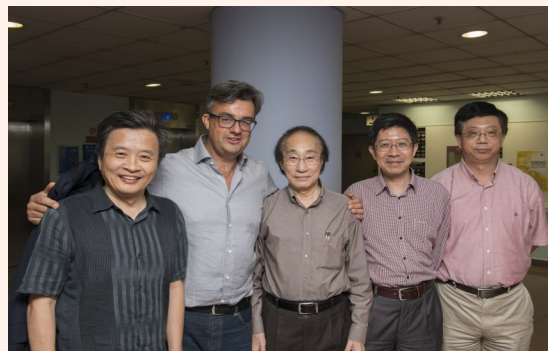
What advice would you give to young aspiring mathematicians?

Never dismiss your own simple ideas and observations.

Many important discoveries come from everyday observations and deep theories are developed out of simple ideas. The challenge is to reveal principles of nature from observations and to develop theories from ideas. Being able to see through observations of phenomenon, distil essential substance and develop theory from ideas are keys to doing good research.

Chat with

Prof Sun Yeneng

Professor Sun Yeneng will take on the mantle of Dean with effect from 1 July.

What/who inspired you to pursue a career in mathematics?

When I was in high school, I had a very inspiring teacher in mathematics, the late Mr Yang Shipu. He encouraged my interest in mathematics and supported me to participate in various levels of mathematics competitions, which led me to choose to major in mathematics in the University of Science and Technology of China (USTC). Just before I graduated from USTC in 1983, the American Mathematical Society (AMS) started sending a team to China (with the support of the Chinese Ministry of Education) to select students to study for a Ph.D in the U.S. I was fortunate enough to be recommended by USTC and selected by the AMS team. I joined the Mathematics Department, University of Illinois at Urbana-Champaign (UIUC) as a Ph.D student and graduate teaching assistant in 1984.

When did you join NUS, and what were some of the challenges you have faced in your academic career?

I joined the NUS Mathematics Department in 1989. When I was a graduate student in mathematics in UIUC, I got interested in mathematical economics as well. Besides taking the usual mathematical courses and writing a Ph.D thesis in analysis, I also took a few courses in the Economics Department. The usual challenges facing a new researcher are how to build up his/her own research program and how to establish his/her own professional networks. This could be more difficult for someone working in an interdisciplinary area. I tried to work towards overcoming those challenges by attending conferences/workshops actively and by working with quite few able co-authors.

What advice would you give to young aspiring mathematicians?

Mathematics is a very big discipline with a very wide range of applications. In the current digital age, mathematics is playing an even more important role in changing the way we live and the way we work. It will be important for a young mathematician to understand his/her own interest/strength and the current stage of the particular subfield, and then choose the right research programs to work on so that the research could make a difference in some way.

How do you juggle research, teaching and administrative duties?

It was not easy for me to switch between the different modes of thinking for research, teaching and administrative duties when I was Head of the Economics Department. I did somewhat better as Director of the Risk Management Institute. I hope that I can still manage to get some research done while serving as Dean.

What do you hope to achieve in your new role as Dean?

I hope to build on our current strengths, based on the exemplary work of Zuowei, to take the Faculty to new heights of excellence in education and research. The University is emphasizing the importance of introducing interdisciplinary elements into our undergraduate curricula. I hope that our Faculty could play an important role in this educational transformation. Besides continuing our efforts to explore new frontiers of science and technology through innovative research, we also need to strengthen our Ph.D programs and develop more successful graduate coursework programs in the Faculty.

Chat with
Prof Goh Say Song

What/who inspired you to pursue a career in mathematics?

I was very fortunate to have three exceptional mathematics teachers at Raffles Junior College, namely Mrs Kwek Sian Choo, Ms Mak Lai Ying and Mdm Teng Siok Ting, whom I still keep in touch after more than 35 years. Inspired by their dedicated teaching, I always wanted to make contributions to both mathematics and education. After my undergraduate studies at the University of Oxford, my mathematical aspiration extended into being a scholar and educator at the university, which brought me to the University of Michigan, Ann Arbor, for my PhD degree. At Michigan, I was greatly inspired by my thesis advisor Professor Peter L. Duren, who opened my eyes to the joy of mathematical research.

When did you join NUS, and what were some of the challenges you have faced in your academic career?

I joined the Department in 1994 during the headship of Professor Peng Tsu Ann, whom I am always grateful to for giving me the opportunity to pursue my dream job. After the completion of my PhD thesis in univalent functions of complex analysis, I faced the significant challenge of sustaining my research career as most of the interesting prob-

lems in the area had been solved. I was extremely fortunate to have the kind mentorship of Professor Lee Seng Luan who introduced me to the emerging area of wavelets and opened an entirely new dimension to my research. This subsequently facilitated me to take various steps out of my comfort zone, moving between related topics in pure and applied mathematics as well as occasional ventures into applications.

What do you hope to achieve in your new role as Dean of Admissions?

It is of paramount importance that an applicant makes an informed decision in choosing a course of study that fits his or her aptitude and passion, and also has the necessary support to pursue the course. As Dean of Admissions, I hope to facilitate and enhance collaborations between the Office of Admissions and the faculties and schools of NUS to make this possible. These efforts could range from engagement and recruitment of prospective students to providing financial aid and scholarships to existing students. This also aligns with my long-term career goal of contributing towards the education landscape of Singapore.

Thank You!

Associate Professor Fred Leung

Congratulations to Associate Professor LEUNG Pui Fai, Fred who was awarded the Honorary Fellowship in July 2020. The Honorary Fellowship recognises retired Associate Professors for their positive contributions at the University and / or Faculty level.

Over an illustrious career at NUS spanning 38 years, Prof Leung contributed significantly to the body of knowledge in differential geometry, including understanding of the relationships between the metric and the topological properties of compact minimal submanifolds in a sphere, complete non-compact submanifolds in an Euclidean space and eigenvalue estimates for complete minimal submanifolds in a hyperbolic space.

A highly versatile and committed educator, Prof Leung was part of a team of Mathematics teaching staff who developed teaching content and set assessment materials for the Engineering Mathematics module from 2002 to 2017, for first year Engineering students. He also taught Advanced Calculus for Arts and Social Sciences students, Real Analysis for Business students and Calculus for Computing students. He also supervised 16 Honours projects. Prof Leung served on the Honours Programme Committee and the Student Advisory Committee, and was the Department's Student Exchange Programme representative from 2013 to 2017. He also played a role in providing youths early exposure to research and scientific advances, to nurture their interest in science, under the Ministry of Education's Science Mentorship Programme.

As a Member of the Singapore Mathematical Society, Prof Leung contributed actively to the society's mathematical outreach activities to strengthen mathematical education, and foster appreciation of mathematics and its connections to other disciplines and daily life.

Prof Leung obtained his basic degree in mathematics from the University of Hong Kong (1975), Masters from York University, Canada (1977), and M.Sc. (1979) and Ph.D. (1981) from the University of Notre Dame, USA. He received the National Day Long Service Award (2009) in recognition of his many years of contributions to education.

Prof Leung said, "*I am honoured to receive the Fellowship. I wish to thank my friends, colleagues and all the staff in the Department of Mathematics for their friendship, encouragement and support over the years.*" Prof Leung plans to live a simple life and spend more time with his family.
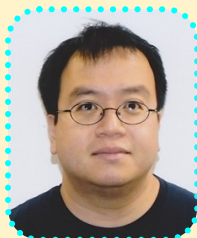
Staff Accolades

Professor Shen Zuowei has been elected as a fellow of the World Academy of Sciences (TWAS), a global science academy for the advancement of sciences in developing countries based in Trieste, Italy. Thirty-six new TWAS Fellows were elected into its membership, including two mathematicians.

Student & Alumni Accolades

Our alumnus Professor Lim Lek-Heng (BSc. Honors, class of 1996) has been elected as a Fellow of the American Mathematical Society (2020 Class), for his contributions to applied mathematics, particularly numerical linear algebra.

Congratulations to our recent graduate Mr Yap Jit Wu (class of 2020) for winning the gold medal at the 2020 Alibaba Global Mathematics Competition.

The Alibaba Global Mathematics Competition is jointly organized by the China Association for Science and Technology, the Alibaba Foundation, and Alibaba DAMO Academy.

Awardees of 2020 Alibaba Global Mathematics Competition

Gold Medal
王东嵘 | Massachusetts Institute of Technology
郑凡 | Princeton University
Yap Jit Wu | National University of Singapore
张铖 | University of California, Berkeley

Silver Medal
马骁 | University of Science and Technology of China
张盛桐 | Massachusetts Institute of Technology
宓泽皓 | Peking University
康凯河 | Peking University
Colin Tang | Massachusetts Institute of Technology
Allen Liu | Massachusetts Institute of Technology

Bronze Medal
鲁一�統 | Peking University
徐恺 | Peking University
姚睿 | Massachusetts Institute of Technology
Christian Bernert | University of Göttingen
卢维潇 | Peking University
吴瑞 | Chinese Academy of Sciences
Matthieu Dolbeault | Sorbonne Université
邓灵超 | Peking University
欧阳铭探 | Peking University
夏铭涛 | University of California, Los Angeles
Junyao Peng | Massachusetts Institute of Technology
闫尧 | Peking University

Hornourable Mention
Jeck Lim | University of Cambridge
李冠淳 | New York University
陈子恒 | University of Texas at Austin
刘亦嘉 | Duke University
姚远 | Massachusetts Institute of Technology
赵文彬 | City University of Hong Kong
秦瑞徕 | University of California, Berkeley
赵斌 | Peking University
龙志昊 | Princeton University
吕俊龙 | University of Hongkong
陈利涛 | Nankai University
陈嘉杰 | California Institute of Technology
问题兴 | University of Science and Technology of China
Vincent Huang | Massachusetts Institute of Technology
Sang Woo Ryoo | Princeton University
葛浦亮 | The University of North Carolina at Chapel Hill
雷开斯 | Nanjing University
刘宇凯 | University of Pennsylvania
姚博文 | Peking University
陈泽楠 | Peking University
周达明 | Peking University
Kevin Ren | Massachusetts Institute of Technology
倪成卓 | Princeton University
戴陈辰 | Tsinghua University
Marius Tiba | University of Cambridge
Ferdinand Wagner | University of Bonn
Michael Ren | Massachusetts Institute of Technology

刘永杰 | Peking University
Enguérand Louis Nicolas Petit | Ecole Normale Supérieure Ulm
郭宇城 | Fudan University
郑方毅 | Peking University
谢卓凡 | Massachusetts Institute of Technology
申武杰 | Peking University
薛子楠 | Princeton University
陈致远 | Peking University
冯逸凡 | Peking University
周居 | Shanghai Jiao Tong University
Kunrui Wang | Brown University
Aleksandre Saatashvili | Massachusetts Institute of Technology
黄矿 | Columbia University
郭子祺 | Peking University
Alexander Kalmynin | National Research University Higher School of Economics, Moscow
胡卫 | The Hong Kong University of Science and Technology
贾棋蚌 | Stanford University
吴正诚 | Peking University
侯喆文 | Peking University
杨名 | University of Cambridge
钱振 | The Chinese University of Hong Kong
Dai Shi | Stanford University
Noah Taylor | University of Chicago
张魁元 | Stanford University

NUS e-Open House, 3 March

Engagement event for students, 22 Apr

Faculty e-Open House, 16 May

In light of the Covid-19 safety precautions, this year's Open House and outreach events moved to online platforms.

Our colleagues and students met prospective students on Zoom to share more about the department's undergraduate programmes, and to answer questions ranging from programmes, to campus life and more. It was an interesting learning experience for everyone involved as we brainstormed for ways to make our talks and chat sessions more interesting on a platform new to us.

We hope we can, and look forward to meeting prospective students in person at next year's Open House!