E-News for Math Students & Alumni

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Professor Toh Kim Chuan is internationally recognised for his work on computational optimisation, and is a world-leading figure in algorithms for conic and semi-definite programming (SDP).

Prof Toh is awarded the **2019 President's Science Award** for his fundamental contributions to the theory, algorithms and applications of convex optimisation, especially the development of algorithms and software for semidefinite and conic programming.

2020 Chevalley Prize in Lie Theory

Bao Huanchen is currently a Presidential Young Professor in the Department of Mathematics, having joined us in July 2019.

Prior to this, he was a postdoc at the University of Maryland, the Institute for Advanced Study (IAS), and the Max Planck Institute for Mathematics.



Wang Weiqiang is currently a professor of mathematics at the University of Virginia. He was a postdoc at IAS, Yale University, and the Max Planck Institute for Mathematics in Bonn.

His research interest lies in representation theory, including Lie superalgebras, Hecke algebras, quantum groups, and connections to algebraic geometry.

(Photo courtesy of Lei Zhang)

The 2020 Chevalley Prize in Lie Theory will be awarded to **Bao Huanchen** and **Wang Weiqiang** for their fundamental contributions to the theory of quantum symmetric pairs. This award is based on two publications: the paper "Canonical bases arising from quantum symmetric pairs," published in *Inventiones Mathematicae*, and the mono-graph "A new approach to Kazhdan-Lusztig theory of type B via quantum symmetric pairs," published in *Astérisque*. In these works, Huanchen Bao and Weiqiang Wang completely extended the known theory of canonical bases from the case of quantized enveloping algebras to the case of quantum symmetric pairs.

The Chevalley Prize is awarded in even-numbered years for notable work in Lie Theory published during the preceding six years; a recipient should be at most 25 years past the PhD. The prize was established in 2014 by George Lusztig to honor Claude Chevalley (1909-1984), a founding member of the Bourbaki group. The 2020 prize will be awarded on 16 January 2020 during the Joint Prize Session at the 2020 Joint Mathematics Meetings in Denver. The year long 90th anniversary celebrations had commenced with the NUS Arts Festival 2019: A Game of Numbers on 15 March, followed by two distinguished lectures by Professor David Vogan and Professor Jean Lasserre, and culminated with the 90th anniversary banquet on Friday 27 September.

selebrating IV years.

It was an evening of celebration and reminiscence for colleagues, both past and present, who attended the anniversary banquet.

We also gathered our ex-colleagues who had served as Head of Department at this special occasion - here is one for the album:

Head of Department, from left to right in chronological order:

Prof PENG Tsu Ann	1982 – 1996
Prof Louis CHEN Hsiao Yun	1996 – 2000
Prof LEE Seng Luan	2000 – 2006
Prof CHONG Chi Tat	2006 – 2012
Prof SHEN Zuowei	2012 – 2014
Prof ZHU Chengbo	2014 – present



... More dinner snapshots on next few pages!





A 90th Anniversary Special Award was also presented to Dr Bao Huanchen to recognize his fundamental contributions to the theory of quantum symmetric pairs.

Congratulations to (from left) Profs Goh Say Song, Toh Kim Chuan, Zhu Chengbo, Chong Chi Tat, Tan Eng Chye, Shen Zuowei, Dinh Tien Cuong, Bao Weizhu and Gan Wee Teck (not in picture) on winning the 90th Anniversary Awards. The nine awards are given by the Department of Mathematics to recognize faculty members who have made significant contributions to the Department's reputation and success, through voting by full time faculty members. Each recipient was presented with a bottle of champagne to commemorate this occasion.

Thank you for the music!

Prof Louis Chen sang "Those were the days", Prof Koh belted two Chinese oldies and Prof Zhu Chengbo's daughter Michelle gave a resounding performance on the cello.



Celebrating 90 years!







Clockwise from left:

Prof Zhu Chengbo, Prof Ling San, Prof Tan Eng Chye, Prof Peng Tsu Ann, Prof Shen Zuowei, Prof Louis Chen, Prof Lai Choy Heng (standing), Dr Tay Kian Boon, Prof Chong Chi Tat and Mrs Chong, Mrs Shen, and Prof Zhu Chengbo's daughter

Clockwise from left:

A/Prof Chu Delin, A/Prof Sun Rongfeng (standing), Dr Zhou Chao, Dr Cai Zhenning, Dr Zhang Lei, A/Prof Vincent Tan, Dr Wang Fei; (standing from left:)Dr Liu Xiaoqing, Dr Wong Tin Lok and Prof Ren Weiqing

elebrating 90 years!



Clockwise from left:

Dr Wayne Lawton, Dr Ng Kah Loon, Dr David Chew, Prof Koh Khee Meng, A/Prof Gan Fah Fatt, Dr Chan Yiu Man, A/Prof Tay Tiong Seng, A/Prof Chew Tuan Seng, Dr Cheng Kai Nah and A/Prof Roger Tan



Clockwise from left:

Dr Bao Huanchen, Prof Chen Zehua, Prof Zhao Gongyun, Prof Bao Weizhu, Prof Karthik Natarajan, Prof Toh Kim Chuan, A/Prof Chua Seng Kee, Prof Goh Say Song, Prof Lee Seng Luan, Mrs An and Dr An Xinliang



Clockwise from left:

Prof Lee Soo Teck, Prof Zhang Louxin, Dr Subhroshekhar Ghosh, Prof Dinh Tien Cuong, Dr Wong Woon Kwong, Prof Jon Berrick, Prof Tan Kai Meng and A/Prof Victor Tan



Prof Zhu Chengbo giving a welcome speech



Thank you Prof Victor Tan for being our emcee !



From left:

Standing: Ms Chan Lai Chee, Ms Eng Peiling, Ms Lynette Wong, Ms Yvonne Chow, Mr Alan Wong and Mr Muhammad Ghazali Bin Sungit

Seated: Ms Jenny Yip, Mr Peng Wei, Ms Stella Pang and Ms Jess Phang



Clockwise from left:

A/Prof Tan Kok Choon, A/Prof Peter Pang, Ms Angeline Yee, Ms Yvonne Chow, Ms Stella Pang, Mdm Tay Lee Lang, Ms Chan Lai Chee, Mdm Lum Yi Lei, Prof Sun Yeneng, Prof Zhu Chengbo's wife and Prof Bao Weizhu's wife.



Continuing with celebrations for our 90th Anniversary, we invited Professor Jean-Bernard Lasserre to deliver the second lecture under the auspices of the 90th Anniversary Distinguished Lectures. Prof Lasserre gave a very well received lecture on The Moment-SOS hierarchy and some of its Applications on 4 September.

The first distinguished lecture on Coxeter groups and regular polyhedral was delivered by Professor David Vogan, MIT on 20 March.



Professor Jean-Bernard Lasserre

Welcome to the Department



Dr Bao Huanchen, Presidential Young Professor

Dr Bao obtained his B.S. in Mathematics at Sichuan University in 2010, and his Ph.D. from the Department of Mathematics at University of Virginia in 2015 under the supervision of Prof. Weiqiang Wang. He has been a postdoc in the University of Maryland, College Park from 2015 to 2019. He was a member of the Institute for Advanced Study for the academic year 2016-2017, and a visitor of the Max-Planck institute of mathematics for several summers. His research focuses on the representation theory of Lie algebras, Lie superalgebras, quantum groups, and their connections to geometry and categorification.



Dr Li Qianxiao, Presidential Young Professor

Dr Li graduated with a BA in mathematics from University of Cambridge in 2010, and a PhD in applied and computational mathematics from Princeton University in 2016. In the same year, he joined the institute of High Performance Computing (IHPC), A*STAR, as a research scientist and he currently holds a joint appointment in NUS and IHPC. His research interests include the interplay of machine learning and dynamical systems, stochastic gradient algorithms for large-scale machine learning, as well as the application of data-driven methods to problems in the physical sciences.



Dr Marko Weber, Assistant Professor

Dr Weber's most recent academic position was as a postdoctoral researcher at Columbia University, where his research focused on the systemic effects of fire sales in financial markets. He received his doctorate from Scuola Normale Superiore with a thesis on optimal trading strategies in finitely deep markets. His dissertation was awarded with the 2015 Bruti Liberati prize for best doctoral thesis in Mathematical Finance. He is also the recipient of the 2016 Young Researcher Prize in Financial Mathematics from Bar-Ilan University. Dr Weber's work experience includes an associate position at JPMorgan and internships at Deutsche Bundesbank, UBS and IBM Research.

Welcome to the Department



Peng Tsu Ann Assistant Professor From left: Dr Lee Ching-pei, Dr Simon Etter



Teaching Assistant From left: Miss Guo Linjing, Mr Li Yunzhe and Mr Abhinav Natarajan

Staff Awards & Accolades



Congratulations to

A/P TAN Kai Meng on his promotion to Professor with effect from 1 July 2019.



Prof TOH Kim Chuan has been appointed as **Leo Tan Professor in Science**, in recognition of his excellence and international recognition in the area of science and all its related disciplines, as well as significant and impactful leadership in raising standards of the University with respect to research or creative activity, teaching and service.



2019 National Day Awards: The Long Service Medal

From left: **Prof GOH Say Song, Prof LEE Soo Teck, Prof YANG Yue and Prof TOH Kim Chuan** (photo above) received the Long Service Medal. The Singapore National Day Awards recognize various forms of merit and service to the nation.



2019 Department Quality Service Award

From left: Ms CHAN Lai Chee, Ms Lynette Wong

HKUST-KAIST-NUS Joint Workshop in Mathematics: Algebra, Algebraic Geometry and Lie Theory



For the second consecutive year, faculty members from HKUST, KAIST and NUS participated in the HKUST-KAIST-NUS Joint Workshop in Mathematics. For this year, the theme of the workshop was Algebra, Algebraic Geometry and Lie Theory and was held at NUS from 7 to 9 November.

The inaugural workshop in 2018 was held in KAIST (Korea).

HKUST:	Huai-Liang Chang, Jing-Song Huang and Ivan Ip
KAIST:	Sanghoon Baek, Wansu Kim and Sijong Kwak
NUS:	Huanchen Bao, Lei Zhang and De-Oi Zhang

The following faculty members gave talks at the workshop



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The Department warmly congratulates all our students on their graduation and recipients of the following medals and prizes. We welcome everyone to our alumni family! All the Best !

UNDERGRADUATE MEDALS AND PRIZES

Lim Soo Peng Book Prize	Way TAN
Tan Teck Chwee Book Prize	LIU Shiqi ; YAP Jit Wu
Leong Teng Kiang Memorial Prize in Mathematics:	HE Xinyi
Ho Family Prize	Kevin Christian WIBISONO
Lijen Industrial Development Medal	LIM Zhan Feng; KOR Chong Luck Ryan ; WANG Zexin
Singapore Mathematical Society Medal and Prize:	ANG Yan Sheng
The Ven. Dr. D. D. Chelliah Gold Medal	LE Minh Phuc
Medal of Excellence in Mathematics	VO Anh Duc
Singapore National Academy of Science (SNAS)	XIA Rui
GRADUATE MEDALS AND PRIZES	
Louis Chen Hsiao Yun Best Dissertation Prize	MENG Sheng
Best Graduate Researcher Award	FENG Yue



Guest Speaker Emeritus Professor Louis Chen (Department of Mathematics and Department of Statistics and Applied Probability) inspired the graduates with his words and anecdotes



Our valedictorian Mr Ang Yan Sheng who graduated with honours in Mathematics, and was the winner of the Singapore Mathematical Society Medal and Prize, Lim Soo Peng Book Prize, Tan Teck Chwee Book Prize, and Special Programme in Mathematics