NUS National University of Singapore | Department of Mathematics Faculty of Science

JULY~ DEC 2021, E NEWS | ISSUE 20

NUS MATHEMATICS

STAYING IN TOUCH WITH OUR STUDENTS AND ALUMNI

PROVOST'S CHAIR APPOINTMENT

Prof Zhu Chengbo has been appointed as Provost's Chair from 1 July 2021.

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AWARDS & ACCOLADES

Congratulations to our faculty members Prof Bao Weizhu, Prof Frank Stephan, Dr Li Wei, Dr Jonathan Scarlett and Prof Shen Zuowei for their respective achievements

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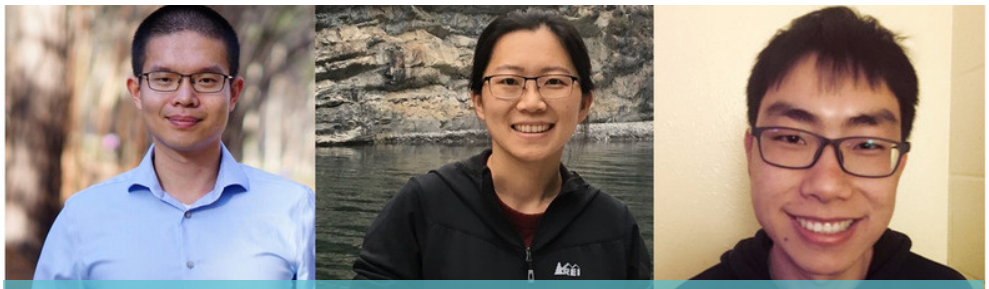
PAGE 2 | VISIT BY AMBASSADOR OF HUNGARY TO SINGAPORE, HER EXCELLENCY MS JUDIT PACH

PAGE 3 | BEST WISHES & CONGRATULATIONS CLASS OF 2020 & 2021



PAGE 4 | WARM WELCOME TO OUR NEW FACULTY DR HUANG HAO, DR YAO YAO & DR YU HUI

Visit from Ambassador of Hungary to Singapore Her Excellency Ms Judit Pach

3rd & 7th December 2021

NUS President receiving a Gömböc model from Her Excellency Ms Judit Pach, Ambassador of Hungary to Singapore

Visit to the department on 7 December

About the Gömböc

It is a convex three-dimensional homogeneous object with exactly one stable and one unstable point of equilibrium.

Fun fact! The donated Gömböc bears the serial number 1905 – the year in which NUS was founded.

NUS President Professor Tan Eng Chye hosted a visit from Her Excellency Ms Judit Pach, Hungarian Ambassador to Singapore on 3rd December 2021.

During the visit, Ambassador Pach presented a Gömböc to NUS on behalf of its inventor and Hungarian mathematician Professor Gábor Domokos.

The Department of Mathematics also hosted a separate visit on 7th December 2021 for Ambassador Pach and Professor Kostya Novoselov, NUS Tan Chin Tuan Centennial Professor who had helped to make the connection between Professor Domokos and the department on the donation of the Gömböc,

The Department of Mathematics is thankful to Professor Gábor Domokos for this meaningful and befitting gift.

Congratulations Class of 2020 & 2021!

Relive the special moments!

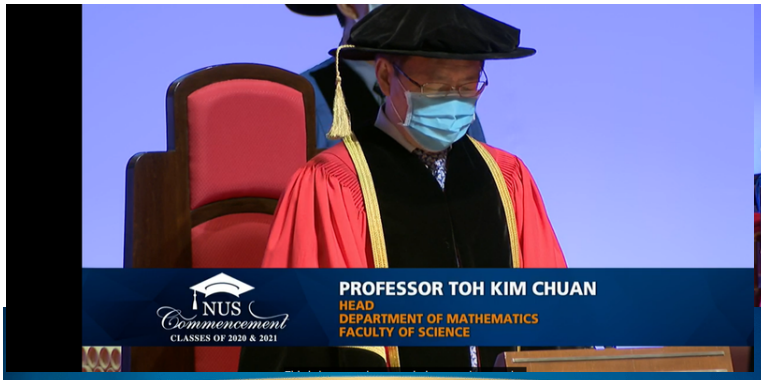
Watch the webcast at

Ceremony 52
https://youtu.be/Xt085oTrT-g

Ceremony 53
https://youtu.be/V81sJSTei7E

Due to the ongoing Covid 19 pandemic and safe management measures, the commencement ceremony for class of 2020 was postponed. In June 2021, in consideration of the uncertainties, the university held a virtual ceremony for both class of 2020 and 2021, and made the online event more meaningful for our students with many familiar faces such as the professors, admin staff and canteen staff sending their (pre-recorded) best wishes to our graduates. The University continued to plan for in-person ceremonies which finally took place over many smaller ceremonies, much to the joy of the graduates who were finally able to celebrate this important milestone.

Congratulations Class of 2020 and Class of 2021!
We wish you all the best as you embark on the next exciting chapter of your lives!

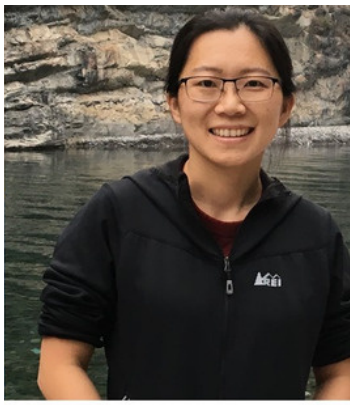


NEW FACULTY MEMBERS

Welcome to our Department!

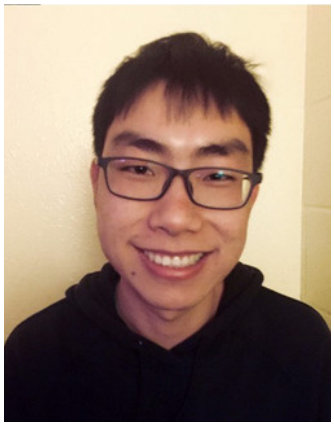
Dr Huang Hao joined the Department as a Tenured Associate Professor on 6 September 2021 from Emory University. He concurrently holds the title as a Dean's Chair. Dr Huang works in extremal combinatorics, probabilistic/algebraic methods, spectral graph theory, structural graph theory, and applications in theoretical computer science.

In a breakthrough paper published in "Annals of Mathematics" in 2019, Dr Huang settled a nearly 30-year old conjecture in theoretical computer science, known as the sensitivity conjecture. His research has been recognized by a Sloan Research Fellowship and an NSF Career Award in 2020.



Dr Yao Yao joined the Department as a Tenured Associate Professor on 6 September 2021. Dr Yao works in mathematical analysis of nonlinear PDEs arising from fluid mechanics and mathematical biology, in particular, finite-time singularity formation in fluid equations, aggregation-diffusion equations modeling chemotaxis in biology, as well as some topics on transport equations. Her works have been published in Annals of Mathematics, Inventiones Mathematicae, Communications on Pure and Applied Mathematics, Duke Mathematical Journal, and J. European Math Society.

Dr. Yao's research has been recognized by a Sloan Research Fellowship and an NSF Career Award in 2020.



Dr Yu Hui joined the Department as a Tenure-Track Assistant Professor on 21 September 2021 from Columbia University. He will concurrently hold the title as a President's Young Professor.

Dr Yu received his PhD in 2017 from University of Texas at Austin under the direction of Luis Caffarelli. Dr. Yu Hui works in theory of elliptic PDEs, calculus of variations and geometric flows. His works have been published in journals such as J. European Mathematical Society, Duke Mathematical Journal, and Annals of PDE.

AWARDS & ACCOLADES

Congratulations to our colleagues!

"It's an honour to be selected for this award, and I am deeply grateful to all of my collaborators and students that worked together with me on group testing and related topics; their efforts have truly been invaluable in pushing this research forward."

Jonathan Scarlett is recognised as among the most influential innovators in Asia Pacific in the 2021 MIT Technology Review Innovators Under 35

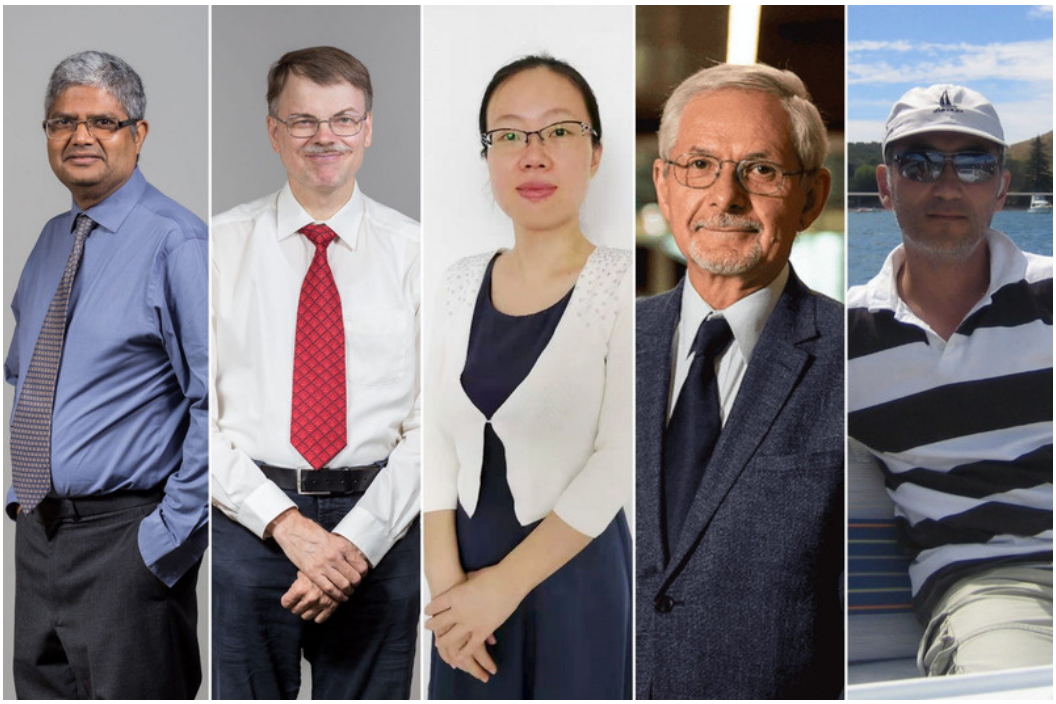
Group testing is a widely used technique for fast testing in medical applications (e.g. blood tests or nasal PCR tests). It has been a popular and powerful strategy during the height of the COVID-19 pandemic when testing resources worldwide were scarce and costly.
The group testing problem consists of determining a small set of defective items (e.g. abstractly representing infected individuals in medical testing) from a larger set of items based on tests on groups of items. It can be thought of as a combinatorial search problem with a flavour of sparse inference.

Asst Prof Jonathan Scarlett from NUS Computer Science and NUS Mathematics has spent years in better understanding the mathematical algorithms and theory behind group testing. His work provided new precise characterisations of the performance bounds for algorithms and impossibility results, which are the fundamental mathematical limits of the problem. He has also broadened the scope of the problem by making fundamental contributions on issues such as partial recovery (e.g. tolerating a small number of false positives or false negatives), proving phase transition behaviour on how many tests are required, proving achievability and impossibility results on the performance of group testing algorithms under noise, and several other variations on the problem.

Asst Prof Scarlett also adapted his mathematical studies of group testing to other seemingly distinct signal acquisition problems, which are relevant in applications such as MRI.

AWARDS & ACCOLADES

Congratulations to our colleagues!



NUS Mathematicians Wei Li and Frank Stephan jointly with their collaborators win the EATCS-IPEC Nerode Prize [From left to right: Professors Sanjay Jain and Frank Stephan and their collaborators, lecturer Wei Li from the NUS Department of Mathematics, Professors Cristian Calude from the University of Auckland, and Bakhadyr Khoussainov from the University of Electronic Science and Technology of China and the University of Auckland]

NUS Mathematicians Wei Li and Frank Stephan jointly with their collaborators win the EATCS-IPEC Nerode Prize

Professors Sanjay Jain and Frank Stephan and their research collaborators, lecturer Wei Li from the NUS Department of Mathematics, Professors Cristian Calude from the University of Auckland, and Bakhadyr Khoussainov from the University of Electronic Science and Technology of China and the University of Auckland, have won the EATCS-IPEC Nerode Prize for their paper on Deciding Parity Games in Quasipolynomial Time.

Read more at these links

NUS Computing professors Sanjay Jain and Frank Stephan win EATCS-IPEC Nerode Prize
https://www.comp.nus.edu.sg/news/2021-sanjay-frank-eatcs-ipec/

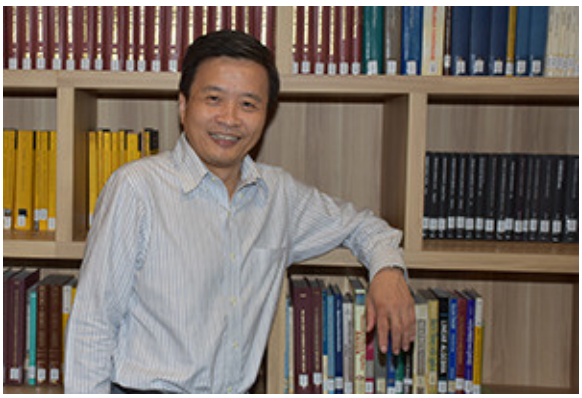
Welcome - Parameterized Complexity (wikidot.com)
http://fpt.wikidot.com

AWARDS & ACCOLADES

Congratulations to our colleagues!

Prof Bao Weizhu has been elected as a Fellow of the American Mathematical Society for his contributions to numerical analysis, in particular the numerical solution of partial differential equations and their applications.

Read more at https://www.ams.org/profession/ams-fellows/ams-fellows



Prof Shen Zuowei, Vice Provost (Graduate Education & Special Duties) received the Public Administration Medal (Silver), 2021 National Day Awards.

The Singapore National Day Awards recognize various forms of merit and service to the nation.

Prof Zhu Chengbo has been appointed as Provost's Chair from 1 July 2021.

Provost's Chair appointments are for a three year period, and are made in recognition of the recipients' outstanding and impactful scholarly accomplishments which are internationally acknowledged.

Prof Zhu's area of expertise is in representation theory of Lie groups and invariant theory.

Acknowledgement: Designed using Canva

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