

SPEECH GUEST OF HONOR

President of NUS, Professor TAN Eng Chye

Professor Chong Chi Tat,

Colleagues, distinguished guests, friends, ladies and gentlemen,

Good morning to everyone!

My heartiest congratulations to the Institute of Mathematical Sciences on its 21st anniversary. I would also like to commend the strong leadership team at IMS, ably helmed by its Director Professor Chong Chi Tat, Management Board Chair Professor Lai Choi Heng, and Scientific Advisory Board Chair Professor Iain Johnstone. They have kept the IMS flag flying.

The Institute for Mathematical Sciences was formally established in July 2000, and opened its doors to its first programme one year later. We were not able to celebrate the institute's official 20th anniversary last year. To us mathematicians, 21 may not be a round number. Nevertheless, it is a significant coming-of-age milestone which we should be happy to commemorate.



Anniversaries are also occasions for reflection and thanksgiving. The IMS website is a well-organized repository, where one can peruse information on the Institute's programmes, workshops and other events since its inception. The Institute's first programme was titled "Coding Theory and Data Integrity", and it ran from July till December 2001. Professor Ling San, the current NTU Provost, was one of the co-organisers. Back then, IMS activities were conducted in seminar rooms in the small IMS colonial buildings, as well as at venues spread across the campus. This auditorium here was only finished two years later, in 2003, and it has now become an integral part of most IMS activities.

Over the past two decades, IMS has played a significant role in advancing mathematical research, deepening mathematical expertise, and developing talents in mathematical sciences for research and industry.

I must commend IMS for its forward-thinking approach in being inclusive, and recognizing the broader and wider potential of mathematics. As the name "mathematical sciences" suggests, the institute does not exclusively host programmes in just mathematics. Instead, the Institute takes on a broader perspective, and recognizes the important role that mathematics plays in science, technology and engineering, and in virtually every field of science.

It is often the combination and interaction between different fields that leads to significant scientific and technological progress. IMS provides this very platform, where interactions are seeded and fostered on a regular basis. The variety of programmes — a total of over 160 of them — that have been organized over

the past 21 years, is testimony to the Institute's inclusive approach. The programmes include amongst others, mathematical epidemiology, quantum physics, statistics, string theory, phylogenetics, cryptology, mathematical biology, finance and economic theory. It is heartening to see that the local mathematical community is embracing this diversity and is branching out to take on new and adjacent challenges.

At the same time, mathematics is a discipline on its own right, driven by fundamental human curiosity and the pursuit of knowledge in some of the more abstract and pure areas. The programmes in logic, representation theory, algebraic and complex geometry and algebraic number theory to name a few, reflect the strength and international reputation of our mathematics department in these fields.

Mathematics is foundational - the progress made even in the some of these purest areas can lead to surprising and important applications further down the road. Number theory has found applications in cryptography; combinatorics and graph theory have applications in computer science, and are the foundations of the statistical analysis of complex networks; algebraic topology informs the efficiency of algorithms, and the list goes on.

Although mathematics is not usually thought to be fashionable, I sincerely believe that mathematics will always be a fascinating and integral field. There are many scientific questions which ultimately, at their core, must have mathematical answers. As an example, the question on why deep neural networks are so effective at what they are doing is ultimately a mathematical question about families of approximating functions. These are among the types of questions which our colleagues and IMS are working on in their research. Mathematical epidemiology and modelling the dynamics of infectious disease transmission will also

see a big uptake over the coming years. The Saw Swee Hock School of Public Health colleagues and other mathematical modellers have become an integral part of the government's efforts to contain and manage the current pandemic.

Another notable success of the IMS is how it has nurtured and built a vibrant research environment in Singapore. IMS activities host more than 700 academic visitors from overseas and Singapore every year, until the pandemic hit. It will be interesting if we can ascertain the proportion of international mathematicians who have passed through the doors of IMS over the past two decades. Many of our colleagues in the mathematics department and statistics departments have mooted new, fruitful collaborations with these friends and visitors; some got to know NUS and the Singapore mathematics community through IMS activities, and even joined NUS subsequently. IMS has thus helped to build a strong community and talent pool at NUS in mathematics and statistical science.

On behalf of NUS, I would like to thank IMS for your contributions to the university, to the research community and to Singapore. Many of you sitting here in the audience have been part of the institute's journey and have helped IMS to achieve the international reputation it holds today. Together, we must keep the IMS going strong. The IMS has had 21 fulfilling years of growth and progress, and I wish the institute every future success. Thank you.

