Singapore Mathematical Society Events and Activities 2015

1. SMS Lecture Series

- This annual lecture series, which is traditionally organized in conjunction with the Annual General Meeting of the Singapore Mathematical Society, features eminent local mathematicians or mathematics educators to share with the public some of their interests and ideas.

  Date: March 9, 2015

  Venue: LT31, National University of Singapore

  Title: **Mathematics, Computation and Science**

  Speaker: **Prof Tay Yong Chiang**

  Y.C. Tay received his B.Sc. degree from the University of Singapore and Ph.D. degree from Harvard University. He is a professor in the Departments of Mathematics and Computer Science and a Resident Fellow in Tembusu College at the National University of Singapore. His research interests include performance modeling, distributed protocols and database systems.

  Abstract: This talk argues that the relationship between Mathematics and Computation is tight and deep, and touches on the very nature of Science.

2. AME-SMS Conference 2015

- This Conference for mathematics teachers is the third joint collaboration between the Association of Mathematics Educators (AME) and the Singapore Mathematical Society (SMS). The one-day programme comprised of lectures delivered by mathematicians and mathematics educators. Several SMS members were invited to deliver lectures for the secondary/junior college teachers.

- **Dr Hang Kim Hoo**

Title: **The Continuing Relevance of Mathematics in the 21st Century**

Abstract: Is Mathematics still relevant in the 21st century? The immediate response is almost surely a 'yes' across all segments of society. How much is and how far can the mathematics that a person know continues to be relevant in the 21st century? The answer to this second question is not going to be uniform or straight forward. Within the larger context of developing 21st century competencies among all students in Singapore schools, this keynote address will focus, from a practitioner perspective, on why, what and how learning, doing and using mathematics can be further refreshed, to address both the attainment of mathematics education and the acquisition of the 21st century competencies. The current Singapore Mathematics Framework (2003) will be revisited to highlight how some current mathematics classroom practices, and the respective platforms, can be reinvented or further enhanced to help students acquire the 21st century competencies through learning, doing and using mathematics. Some challenges faced by the mathematics teaching fraternity in their attempt to infuse the teaching of 21st century competencies in the mathematics classrooms will be highlighted and discussed with proposals on possible strategies to overcome these challenges.

- **Associate Professor Victor Tan**

Title: **The challenges and opportunities of developing the 4C's in the Math Classroom**

Abstract: The 4C's refer to Critical thinking, creative thinking, communicating and collaborating. These are essentially the learning skills under the 21st century competencies. Many math teachers may find it challenging to help their students developing these skills in their math class. In this talk, the speaker will share his thought on the issues encountered by the teachers in teaching these skills. He will also give some examples how to design classroom activities and assessments that will help to enhance the 4C's in students.

3. Singapore Mathematics Symposium

- The 6th Singapore Mathematics Symposium was held on 25th September 2015 at the School of Physical and Mathematical Sciences, NTU. The half day event included four invited lectures by mathematicians from NTU and NUS. In his talk entitled *Stochastic control in optimal investment*, Professor Dai Min (NUS) spoke on two singular stochastic control problems arising from optimal investment. Professor Pan Guangming (NTU) presented a high dimensional extension of the classical non-parametric statistic Spearman's rank correlation coefficient between two independent random variables in the second talk *Spectral statistics of the Spearman's rank correlation matrix*. In the third lecture *On liars and paradoxes*, Professor Ng Keng Meng (NTU) gave

an exposition on Liar's paradox and its influence on the development of mathematical logic. In the final lecture *Hyperbolicity and Weil-Petersson geometry on moduli spaces of canonically polarized manifolds*, Professor To Wing Keung (NUS) spoke on his joint work with Professor Yeung Sai Kee (Purdue). It is a longstanding question in differential geometry that whether moduli spaces of n-dimensional complex manifolds possess certain hyperbolicity property known as Kobayashi hyperbolicity. In their joint work, Professors To and Yeung produced breakthrough to this open problem. In addition to the four invited lectures, graduate students from NTU and NUS also took part in a poster exhibition and competition.

Date: September 25, 2015

Venue: Nanyang Technological University

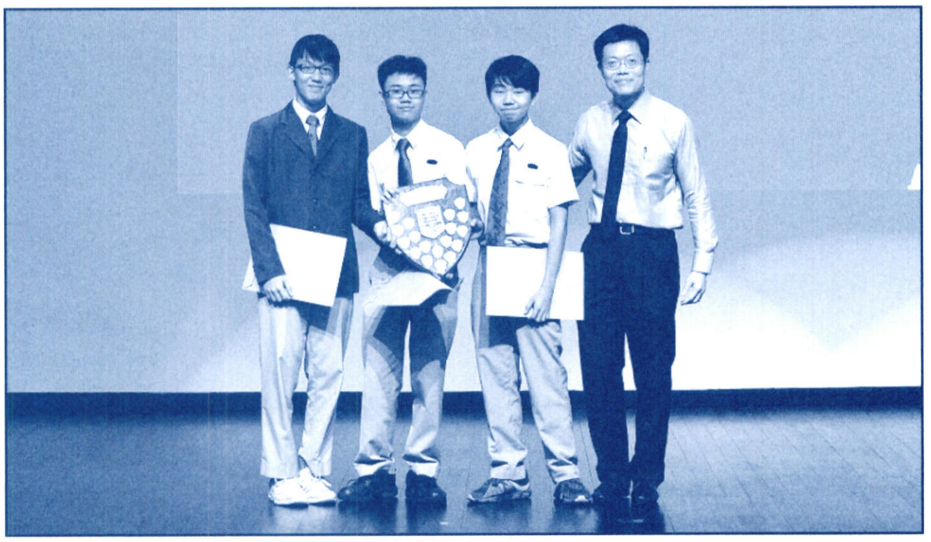
Prof Dai Min giving his lecture

4. Singapore Mathematical Olympiad 2015

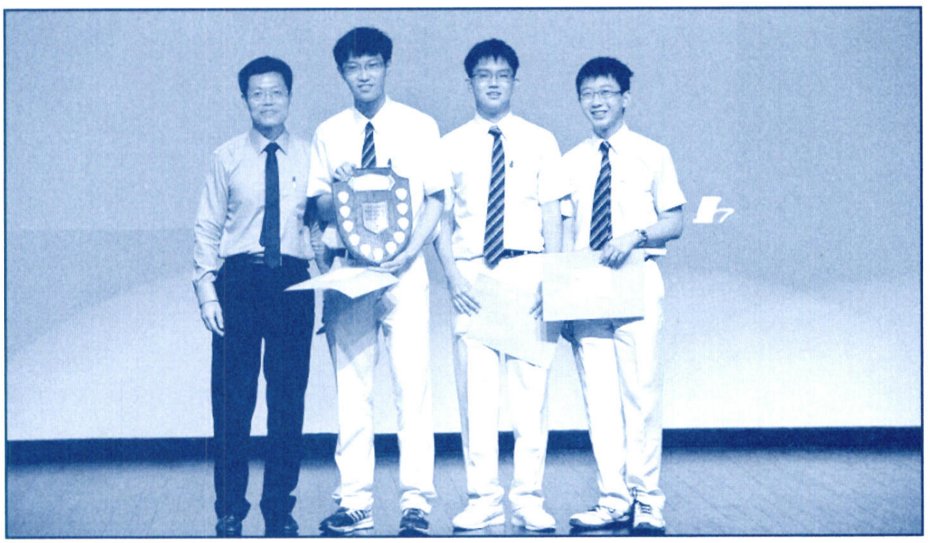
- Dates:
  June 3 2015 (Junior and Senior section - First round)
  June 4 2015 (Open section - First round)
  June 27 2015 (Junior and Senior section - Second round)
  July 4 2015 (Open section - Second round)
- The Society conducted the Singapore Mathematical Olympiad (Junior, Senior and Open Sections) in June 2015. A total of 7976 students from 119 schools participated in the various sections of the Olympiad.
- For Junior section, there are 3809 participants from 99 schools. For Senior section, there are 2357 participants from 90 schools. For Open section, there are 1810 participants from 63 schools. In addition, there were 98 participants from Malaysia, Indonesia and Vietnam.

- The SMO Subcommittee 2015 consists of
  - Associate Professor Victor Tan *(Chairman)*
  - Dr Hang Kim Hoo *(Deputy Chairman/Administration)*
  - Dr Toh Pee Choon *(Junior Section Coordinator)*
  - Dr Ku Cheng Yeaw *(Senior Section Coordinator)*
  - Associate Professor Toh Tin Lam *(Open Section Coordinator)*
  - Associate Professor Tay Tiong Seng *(Second Round Coordinator)*

SMO 2015 Junior Section Challenge Trophy Winner (NUS High School)



SMO 2015 Senior Section Challenge Trophy Winner (NUS High School)



SMO 2015 Open Section Challenge Trophy Winner (Raffles Institution)

- The top 10 ranking for the SMO individual awards is given below:

	Junior Section		Senior Section		Open Section
1	Joel Tan Junyao (NUSHS)	1	Bryan Wang Peng Jun (HCI)	1	David Lin Kewei (RI)
2	Khor Jun Wei (RI)	2	Dylan Toh Shan Hong (NUSHS)	1	Liu Yi Jia (RI)
3	Zhang Xiaorui (NUSHS)	3	Tan Likai (RI)	3	Sheldon Kieren Tan (RI)
4	Tan Wee Kean (RI)	4	Clarence Chew Xuan Da (NUSHS)	4	Ma Zhao Yu (RI)
5	Boo Tse Yang Lucus (NYPS)	5	Ma Zhao Yu (RI)	5	Dylan Toh Shan Hong (NUSHS)
6	Victor Loh Wai Kit (RI)	6	Teo Por Loong Jacob (NUSHS)	6	Clarence Chew Xuan Da (NUSHS)
7	Cheng Puhua (RI)	7	Lee Ker Yang (RI)	6	Tan Siah Yong (RI)
8	Ho Li Xiong Timothy (NUSHS)	8	Matthew Fan Xin Yu (NUSHS)	8	Lee Hua Jun Eugene (RI)
9	Ng Yu Peng (HCI)	8	Ong Hong Ming Teddy (NUSHS)	9	Bryan Wang Peng Jun (HCI)
10	Ang Boon Han Nathaniel (ACSI)	10	Wang Jianzhi (RI)	10	Tan Likai (RI)

- The SMO School Awards for Category 1 and 2 are given below:

Category 1	
Gold Award	**Silver Award**
Anglo-Chinese School (Independent)	Maris Stella High School
Hwa Chong Institution	National Junior College
Nanyang Girls' High School	River Valley High School
NUS High School of Mathematics and Science	St Joseph's Institution
Raffles Girls' School (Secondary)	Victoria School
Raffles Institution	
Bronze Award	
Anderson Secondary School	Nan Chiau High School
Catholic High School	Nan Hua High School
Cedar Girls' Secondary School	Ngee Ann Secondary School
CHIJ St Nicholas Girls' School	Swiss Cottage Secondary School
Chung Cheng High School (Main)	Tanjong Katong Secondary School
Dunman High School	

Commendation Award	
Bukit Batok Secondary School	NPS International School, Singapore
Clementi Town Secondary School	Paya Lebar Methodist Girls' School
Commonwealth Secondary School	Singapore Chinese Girls' School
Crescent Girls' School	Temasek Junior College
Fuhua Secondary School	Temasek Secondary School
Jurong Secondary School	Xinmin Secondary School
Kranji Secondary School	Zhenghua Secondary School
Methodist Girls' School	Zhonghua Secondary School

Category 2	
Gold Award	**Silver Award**
Anglo-Chinese School (Independent)	National Junior College
Hwa Chong Institution	NUS High School of Mathematics and Science
Raffles Institution	River Valley High School
	Victoria Junior College
Bronze Award	
Dunman High School	Temasek Junior College
St Andrew's Junior College	
Commendation Award	
Anderson Junior College	Nanyang Junior College
Anderson Secondary School	Pioneer Junior College
Catholic Junior College	St Joseph's Institution
Meridian Junior College	St Joseph's Institution International
Nan Hua High School	

5. Singapore Mathematics Projects Festival 2015

- Dates:
  February 7 2015 (Preliminary round A)
  February 14 2015 (Preliminary round B)
  March 22 2015 (Festival Congress – Final round)

- This year the Project Festival attracted 16 projects from Junior section and 21 projects from Senior section.
- The preliminary rounds were held at various locations, including NUS, Hwa Chong Institution, NUS High School, Paya Lebar Methodist Girls' School and Raffles' Girls School. Judging panels made up of Mathematicians and school teachers were formed to grade the presentation of each team.
- 6 teams from the Junior section and 5 teams from Senior Section were invited to the Festival Congress held at Raffles' Girls School.
- The judges for the Festival were
  - Junior Section: Assoc Prof Tay Eng Guan, Dr Teo Kok Ming, Assoc Prof Zhao Dong Sheng, Dr Toh Pee Choon (NIE)
  - Senior Section: Assoc Prof Tay Tiong Seng, Assoc Prof Yang Yue, Dr Wang Fei (NUS)

- Medals were awarded to the following projects:

Junior Section

- Gold (Foo Kean Pew Memorial Prize): **Exploration of the Isoperimetric Inequality**, by Dylan Toh Shan Hong (NUS High School of Mathematics and Science)
- Gold: **Shadow Art**, by Li Anqi (Raffles Girls' School (Secondary))
- Gold: **Flat-folding in Origami**, by Ang Hui Shan, Estelle Lee, Jacqueline Tan Hui Juan (Raffles Girls' School (Secondary))
- Silver: **Inscribing Parallelograms in Polygons**, by Ahnt Htoo Myat (NUS High School of Mathematics and Science)
- Silver: **Transforming Regular Hexagons into 3-dimensional Structures**, Foo Yan Rong, Kee Jin Wen, Pang Wen Ni, Tan Ying Kiat (National Junior College)
- Bronze: ***Pentago*: A Mathematical Approach to the Game**, Maximus Chin Yu Xun, Sim Ee En, Ian (NUS High School of Mathematics and Science)

Senior Section

- Gold (Foo Kean Pew Memorial Prize): **Enumerating (k,l)-critical and Related Permuations**, by Yeo Wan Jin (NUS High School of Mathematics and Science)
- Silver: **The Fault in those Lines**, by Goh Qing Yun, Yeo Yue Han Clement, Xie Linran (Clementi Town Secondary School)
- Silver: **This is the Way -- the Best Method for Parallel Parking**, by Lu Zhihan, Ding Jiaye, Jin Yiting, Chen Zidan (Hwa Chong International School)
- Bronze: **Table Your Time -- Mathematics in Timetabling,** by Liu Kan, Fan Yang, Qian Jing (Hwa Chong Institution)
- Bronze: **A Variation of the Buffon's Needle and Coin Problems,** by Ng Wei En, Tan Siong Min Benjamin, Jared Cheang, Lau Hong Rui (Victoria School)
- Bronze: **Partitions Galore,** by Chan Jun Da, Matthew Ng Cheng En, Jacus Pek Le Xuan (Hwa Chong Institution)
- Bronze: **A Generalization of Vandermonde's Identity and Catalan Number**, by Chang Qing Yang, Wang Anyu, Liu Shiqi (NUS High School of Mathematics and Science)

6. Annual Prize Presentation Ceremony

- Date: September 05 2015

  Venue: NUS High School of Mathematics and Sciences

  Guest of Honour: **Professor Tan Eng Chye**

- The following prizes were given out at the ceremony:
  - 7 prizes for the Singapore Mathematics Project Festival (Junior Section)
  - 9 prizes for the Singapore Mathematics Project Festival (Senior Section)
  - 30 individual prizes for the Singapore Mathematical Olympiad (Junior section)
  - 30 individual prizes for the Singapore Mathematical Olympiad (Senior section)
  - 30 individual prizes for the Singapore Mathematical Olympiad (Open section)
  - 38 School Awards for the Singapore Mathematical Olympiad (Category 1)
  - 38 School Awards for the Singapore Mathematical Olympiad (Category 2)
  - Awards to the Singapore Team to the 56th International Mathematical Olympiad

Guest of Honour Prof Tan with SMS Vice President Prof Victor Tan