TABLE OF CONTENTS

15 YEARS
ANNIVERSARY
OF YMSC
2009-2024

集美清华 求真淬炼
FOR TRUTH AND BEAUTY

Message from the Director

"The growth of a nation's mathematics does not lie in its ability to adhere to the existing rules and methods of the field, or to marginally expand upon the work of renowned scholars from other countries. Instead, true growth lies in forging its own unique and significant paths of research. Such endeavors will attract the interest of scholars worldwide, inspiring them to follow and learn. Although mathematics in China has passed the first stage, it has yet to reach the next level."

After more than two decades of dedicated effort, research in pure mathematics in China - especially in core fields like Number Theory, Algebraic Geometry, Differential Geometry, and Representation Theory - has caught up with contemporary developments. The same can be said for other disciplines such as Analysis, Differential Equations, and Mathematical Physics. However, areas such as Combinatorics, Probability, and Statistics still lag behind the standards set by our European and American counterparts and require immediate improvement.

In order to attract leading scholars to work in China, we must strive to create an exceptional academic environment. Such an environment should showcase cutting-edge research that stimulates scholars and instills in them a sense of immense potential for progress. It should provide them with the necessary support to pursue the novel directions required to solve significant long-standing open problems.

Evaluation criteria for academic achievements should be reformed so that young academics do not merely aspire to win government grants, awards, and titles, such as being inducted into a national academy or even receiving a Nobel Prize. The ultimate aim of pursuing knowledge should be to unravel the mysteries of nature, to illuminate the essence of reality at its deepest level, and, in the process, unearth the profound truth and beauty.

Cultivating a group of world-class scholars in the mathematical sciences in China will play a pivotal role in our collective pursuit of sustainable and enduring technological development into the future.

The upcoming years represent a critical period for the development of mathematics in this nation. With appropriate reform measures in place, I believe that the next five to ten years will see a new generation of world-leading, domestically nurtured scholars emerge, capable of addressing significant foundational mathematical problems.

David Hilbert famously said, “We must know, we will know!” This statement succinctly encapsulates the relentless and earnest pursuit of truth that is the essential spirit of science. We hope that the next generation will embrace this spirit. We must recognize the significance of our quest and the obstacles that lie ahead, and persist unwaveringly.

Shing-Tung Yau

Our Leadership & Organization

Director
Shing-Tung Yau

Deputy Director
Zuoqiang Shi

Deputy Director
Fan Yang

Deputy Director
Xiaokui Yang

Deputy Director
Tong Liang

Total Researchers	166	Faculty Members	85	Postdoctoral Researchers	81
Qiuzhen Chair Professors	2	Professors	26		
Associate Professors	18	Assistant Professors	40		

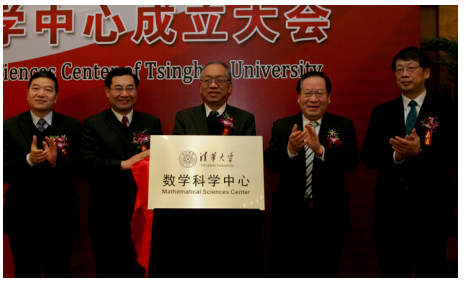
Data as of May 2025

Our History

2009

DEC 17, 2009

Mathematical Sciences Center (MSC) was established with Professor Shing-Tung Yau appointed as the Director.



2011

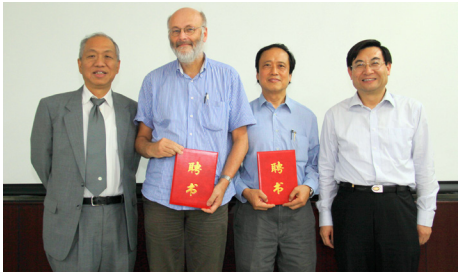
SEP 05, 2011

Postdoctoral Station was established with the first two postdocs joining MSC.

2013

FALL SEMESTER

Professor Shiu-Yuen Cheng and Eduard Looijenga joined YMSC as full-time faculty members.



DEC 18-22, 2013

The Tsinghua Sanya International Mathematics Forum (TSIMF) Facility was created.

2014

DEC 12, 2014

The Ministry of Education officially approved the establishment of YMSC under Tsinghua University.

2015

MAR 19, 2015

The YMSC Inauguration Ceremony was held.

2018

FEB 24, 2018

The Doctoral Program in Mathematics for International Students was approved, with recruitment starting in October 2018.

APR 1, 2018

Professor Akito Futaki, a world-class geometer and former Dean of the Department of Mathematics at the University of Tokyo, joined YMSC as a full-time faculty member.

NOV 16, 2018

Professor Donald Rubin, a world-class statistician and former Dean of the Department of Statistics at Harvard University, joined YMSC as a full-time faculty member.

2020

JUN 12, 2020

The Beijing Institute of Mathematical Sciences and Applications (BIMSA) was established at Yanqi Lake, accompanied by a signing ceremony of the Cooperation and Co-construction Agreement with Tsinghua University.

2021

APR 20, 2021

The Inaugural Ceremony of Qiuzhen College was held at Tsinghua University, along with the Appointment Ceremony of the Dean of the College.

JUN 25, 2021

The then-Tsinghua President Yong Qiu presented Professor Caucher Birkar, a Fields Medalist, with a letter of appointment to YMSC, warmly welcoming him to Tsinghua and extending congratulations on his affiliation with the university.

2022

NOV 18, 2021

Nicolai Reshetikhin, a world-class mathematical physicist, joined YMSC as a full-time faculty member.

APR 20, 2022

A ceremony was held to mark the appointment of Shing-Tung Yau as a Chair Professor at Tsinghua University.

2023

July 16-28

The inaugural International Congress of Basic Science was held in Beijng.

2024

APR 3-6

International conference on the theme 2024 Current Developments in Mathematics and Physics inaugurated celebrating the 15th anniversary of YMSC.

FALL SEMESTER

Professor Vladimir Markovic and Kenji Fukaya joined YMSC as full-time faculty members.

About the Center

According to the 2025 QS World University Rankings

Mathematics at Tsinghua University was ranked **11th** in the world

Previous ranking: 96th in 2009

In December 2009, Tsinghua University established the Mathematical Sciences Center, with internationally renowned mathematician Professor Shing-Tung Yau as director. In late 2014, the Ministry of Education officially approved the establishment of the Yau Mathematical Sciences Center (YMSC) at Tsinghua University.

Under the leadership of Professor Yau, YMSC has achieved remarkable progress over the past decade. The Center has excelled in recruiting exceptional faculty members, nurturing promising young scholars, and spearheading cutting-edge research encompassing a wide range of disciplines within the Mathematical Sciences. As a result, YMSC has emerged as a world-class research institute. Embracing an ethos of openness, inclusiveness, and international cooperation, YMSC continues to attract top scholars from across the globe, while also serving as a hub for a growing cohort of talented young mathematicians and physicists.

Distinguished Faculty

Over the past decade, YMSC has assembled an exceptional team of mathematicians. Leading the Center is renowned mathematician and Fields Medalist, Shing-Tung Yau, known for his groundbreaking work on the Calabi conjecture and positive mass conjecture in general relativity. World-renowned algebraic geometer Eduard Looijenga has also contributed to the faculty for nearly a decade starting from 2013. In 2019, esteemed statistician Donald Rubin joined YMSC, followed by Fields Medalist Caucher Birkar and renowned mathematical physicist Nicolai Reshetikhin in 2021. In 2024, Vladimir Markovic, Fellow of the Royal Society , and Kenji Fukaya, Member of the Japan Academy, joined the YMSC as full-time faculty members.

Emerging Mathematicians

YMSC's research team features a dynamic group of young mathematicians in their 30s, with over 30 members graduated from the world's top 20 universities in mathematics. In 2024, the team welcomed 13 new full-time faculty, including Ma Jie (recipient of the CSIAM Youth Science Award) and Gan Lin (China Youth May Fourth Medalist and supercomputing expert), along with 41 postdoctoral researchers from China, Chile, Honduras, Morocco, USA, Italy, India, Finland, UK, Greece, Japan and other countries, forming a diverse and vibrant research community at the forefront of mathematical innovation.

Research Domains

YMSC's research endeavors encompass five major areas and three cross-disciplinary research fields. Of these, the research groups in Representation Theory, Number Theory, Mathematical Physics, Dynamical Systems, Random Analysis, and Geometry and Topology have achieved remarkable original results that have garnered international recognition. The establishment of the Beijing Institute of Mathematical Sciences and Applications (BIMSA) at Yanqi Lake has further bolstered the scope of our research in the Applied Mathematics.

Research Achievements

Research works of YMSC scholars cover both Pure and Applied Mathematics, including Representation Theory, Algebraic Geometry and Number Theory; Geometry and Topology; Analysis, Partial Differential Equations and Dynamical Systems; Mathematical physics; and Probability Theory and Applied Mathematics. More than 100 academic papers are published in SCI-indexed journals each year. In 2024, over 160 SCI-indexed papers were published, including 3 in top-tier mathematics journals *Inventiones Mathematicae* and *Annals of Mathematics*.

Mathematics Education

Talent cultivation holds a special place at YMSC. All faculty members and researchers actively engage in undergraduate and graduate education and regularly participate in programs such as the Yau Mathematical Sciences Leaders Program. They play a crucial role in training undergraduate students at Qiuzhen College and serve as advisors to graduate students, with the aim of nurturing the next generation of mathematical leaders in China.

International Academic Platform

YMSC has established Memoranda of Understandings with nearly 30 world-renowned universities and research institutes, including Harvard University, Stanford University, Caltech, Oxford University, Cambridge University, University of Southern Denmark, and Imperial College London. Each year, more than 300 scholars in mathematics and related fields visit YMSC for exchanges and cooperation, including winners of the Nobel Prize, the Fields Medal, and the Wolf Prize.

Mathematics Talent Incubator

YMSC is dedicated to identifying and nurturing talented young mathematicians worldwide. Various mathematics competitions and awards, such as the S.-T. Yau High School Science Award, S.-T. Yau College Student Mathematics Contests, ICCM Best Thesis Award, and ICCM Medal of Mathematics attract talented youth at different stages of their mathematical journey.

YMSC Logo

Released in 2017

15 YEARS ANNIVERSARY OF YMSC 2009-2024

集美清华 求真淬炼

FOR TRUTH AND BEAUTY

YMSC 15th Anniversary Celebration Logo

Released in 2024

A Promising Future

Today, the Mathematical Sciences hold unprecedented opportunities for the future. With strong support from Tsinghua University, YMSC is committed to pursuing excellence in both research and education, and in so doing solidifying its position as a premier global research center.

Our Distinguished Faculty

Professor Shing-Tung Yau

Professor Shing-Tung Yau is the Director of YMSC at Tsinghua University. He is a Member of the U.S. National Academy of Sciences, a Member of the American Academy of Arts and Sciences, and a Foreign Member of the Chinese Academy of Sciences. He is the emeritus William Casper Graustein Professor of Mathematics and the emeritus Professor of Physics at Harvard University. He has received the Fields Medal (1982), the Crafoord Prize (1994), the Wolf Prize (2010), the Marcel Grossmann Award (2018), and the Shaw Prize (2023).

Professor Caucher Birkar

Professor Caucher Birkar is a Member of the Academia Europaea and Fellow of the Royal Society. He received the Fields Medal in 2018 for his proof of the boundedness of Fano varieties, together with contributions to the Minimal Model Problem. Professor Birkar was awarded the Leverhulme Prize in 2010 and the AMS Moore Prize in 2016.

Professor Nicolai Reshetikhin

Professor Nicolai Reshetikhin is a Fellow of the American Mathematical Society and Winner of the Weyl-Wigner Award. He was an invited speaker at the ICM in 1990 in Kyoto and a plenary speaker at the ICM in 2010 in Hyderabad. He has made major contributions to the theory of Quantum Integrable Systems, to the Representation Theory of Quantum Groups, and to Quantum Topology. He and Vladimir Turaev constructed invariants of 3-manifolds which are expected to describe the quantum Chern-Simons field theory introduced by Edward Witten.

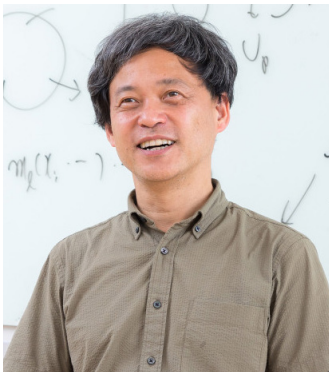
Professor Akito Futaki

Professor Akito Futaki has made seminal contributions to the field of Differential Geometry, in particular defining an obstruction to the existence of Einstein-Kähler metrics on Fano manifolds using equivariant cohomology. Professor Futaki has received the 1990 Geometry Prize and the 2011 Autumn Prize from the Mathematical Society of Japan.

Professor Vladimir Markovic

Fellow of the Royal Society
ICM 2014 Invited Speaker
Jiatai Qiuzhen Chair Professor at Tsinghua University

- An expert in low-dimensional topology and his world-leading research has particularly improved the understanding of the topology of closed 3-manifolds.
- He solved well-known mathematical problems in hyperbolic geometry, including William Thurston's conjecture and the Ehrenpreis conjecture.



Professor Kenji Fukaya

Member of the Japan Academy
Yang Yuanqing Qiuzhen Chair Professor at Tsinghua University
Winner of the Shaw Prize in Mathematical Sciences (2025)

- He developed and has studied extensively a theory in which the Lagrangian submanifolds of a given symplectic manifold are the objects of a generalized category, now called the Fukaya category, and the morphisms are the Floer homology groups.
- His recent work focuses on symplectic geometry and in particular has centered around the study of Lagrangian submanifolds and the Floer homology related to intersections of these submanifolds.

Research Team

YMSC is home to a large group of outstanding mathematicians. As of May 2025, it has a total of 166 faculty members and researchers. Among them are 2 Fields Medalists and 4 members of national academies.

Full Professors 26
Including 5 Women

Associate Professors 18

Assistant Professors 40

Qiuzhen Chair Professors 2

Postdoctoral Researchers 81

Postdocs recruited in 2024 41

Faculty members recruited in 2024 15

Foreign Faculty Members
18
23%

Foreign Postdocs
28
20%

The international faculty at YMSC hail from the US, the UK, Germany, France, Japan, Australia, Chile, and beyond.

5 of our researchers are part of the prestigious Chang Jiang Scholars Program, 6 have received the National Science Fund for Distinguished Young Scholars, 40 have been selected for the national high-level talent program. In 2024, a total of 35 new research projects of YMSC were approved with govermment funds.

ICM Plenary & Invited Speakers	Shing-Tung Yau (1978)	Vladimir Markovic (2014)
	Nicolai Reshetikhin (1990/2010)	Caucher Birkar (2018)
	Kenji Fukaya (1990)	Peng Shan (2022)

Honors & Awards	Recipients
National Fund Recipients	Lei Fu, Hao Wu, Yu Zhou, Chenglong Bao, Jianping Jiang, Peng Shan, Xiaokui Yang, Jie Ma, Yunhui Wu, Yu Qiu, Zhijie Chen, Xuecheng Wang, Hansheng Diao, Yi Zhu, Zuogiang Shi, Lin Gan and 40 other faculty members
Teaching Awards	Long Jin, Yi Jiang, Yu Qiu, Haoran Wang, Yilong Yang, Jie Du, Yu Liu, Jianfeng Lin, Zuogiang Shi, Wenjia Jing, Honghao Gao
Qiushi Outstanding Young Scholar Award	Lei Fu, Ling-Yan Hung, Wei Song, Peng Shan
Alibaba DAMO Academy Young Fellow Award	Hao Wu
Beijing Mao Yisheng Science and Technology Award	Yu Qiu

2024-2025 Awards & Honors

Lingnan University Confers Honorary Doctorate Degrees on Shing-Tung Yau

Lingnan University in Hong Kong held its 2024 Honorary Doctorate Conferment Ceremony, bestowing the Honorary Doctor of Science degree upon world-renowned mathematician Professor Shing-Tung Yau and distinguished structural biologist Professor Nieng Yan.

Nicolai Reshetikhin Receives 2024 Chinese Government Friendship Award

Professor Nicolai Reshetikhin, a leading scholar in mathematical physics at YMSC, was honored with the 2024 Chinese Government Friendship Award. The award is the highest honor for foreign experts who have made outstanding contributions to China's modernization drive.

Kenji Fukaya Awarded 2025 Shaw Prize in Mathematical Sciences

Professor Kenji Fukaya, member of the Japan Academy and researcher at YMSC, received the 2025 Shaw Prize in Mathematical Sciences for his pioneering work on symplectic geometry, especially for envisioning the existence of a category — nowadays called the Fukaya category.

Peng Shan Wins 2024 Xplorer Prize

Professor Peng Shan was granted the 2024 Xplorer Prize in Mathematics and Physics in recognition of her contributions to Representations of Double Affine Hecke Algebras and Their Categorification.

Chenglong Bao Receives CSIAM & ORSC Young Scientist Awards

Professor Chenglong Bao was honored with two distinctions: the 7th Youth Award in Applied Mathematics from the China Society for Industrial and Applied Mathematics (CSIAM), and the Youth Scientific Achievement Award from the Operations Research Society of China (ORSC).

Honghao Gao Recognized for Lagrangian Filling Breakthrough

Assistant Professor Honghao Gao's research on Classification of Lagrangian fillings was selected as one of Tsinghua University's "*Top 10 Pioneering Research and Discovery of 2024*" by faculty and students. He also received the *Most Promising Young Scholar Award* at the 7th DAMO Academy Young Fellow Awards.

Research Highlights & Progress

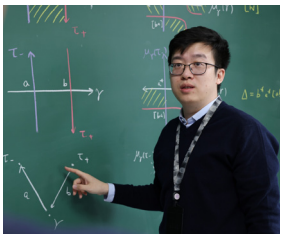
YMSC provides substantial resources and funding, empowering researchers to stay at the forefront of developments across all major areas of mathematics. Over the past 15 years, scholars at YMSC have made significant contributions spanning Pure, Applied, and Computational Mathematics.

In 2024 alone, YMSC produced approximately

160 SCI-indexed publications

including many in the most prestigious international journals.






Significant Publications from 2024

1. Casals, R., Gao, H. A Lagrangian filling for every cluster seed. *Invent. math*. 237, 809–868 (2024).
https://doi.org/10.1007/s00222-024-01268-y

2. Penghui Li, David Nadler, Zhiwei. Functions on the commuting stack via Langlands duality. Annals of mathematics, Pages 609-748 from Volume 200 (2024).
https://doi.org/10.4007/annals.2024.200.2.5

3. Ji, R., Wu, Y. On ends of finite-volume noncompact manifolds of nonpositive curvature. Invent. math. 237, 735–777 (2024).
https://doi.org/10.1007/s00222-024-01266-0

4. D. Arinkin, D. Beraldo, J. Campbell, L. Chen, J. Faergeman, D. Gaitsgory, K. Lin, S. Raskin, N. Rozenblyum. Proof of the geometric Langlands conjecture II: Kac-Moody localization and the FLE. arXiv:2405.03648.
https://doi.org/10.48550/arXiv.2405.03648
Justin Campbell, Lin Chen, Joakim Faergeman, Dennis Gaitsgory, Kevin Lin, Sam Raskin, Nick Rozenblyum. Proof of the geometric Langlands conjecture III: compatibility with parabolic induction. arXiv:2409.07051.
https://doi.org/10.48550/arXiv.2409.07051
D. Arinkin, D. Beraldo, L. Chen, J. Faergeman, D. Gaitsgory, K. Lin, S. Raskin, N. Rozenblyum, Proof of the geometric Langlands conjecture IV: ambidexterity arXiv:2409.08670.
https://doi.org/10.48550/arXiv.2409.08670



5 Z. Yao, J. Su, & S. Yau, Manifold fitting with CycleGAN, Proc. Natl. Acad. Sci. U.S.A. 121 (5) e2311436121, https://doi.org/10.1073/pnas.2311436121 (2024)

6 Z. Yao, B. Li, Y. Lu, & S. Yau, Single-cell analysis via manifold fitting: A framework for RNA clustering and beyond, Proc. Natl. Acad. Sci. U.S.A. 121 (37) e2400002121. https://doi.org/10.1073/pnas.2400002121 (2024)

7 Shao, Yuguo and Wei, Fuchuan and Cheng, Song and Liu, Zhengwei.Simulating Noisy Variational Quantum Algorithms: A Polynomial Approach.Phys. Rev. Lett. 133, 120603. https://doi.org/10.1103/PhysRevLett.133.120603

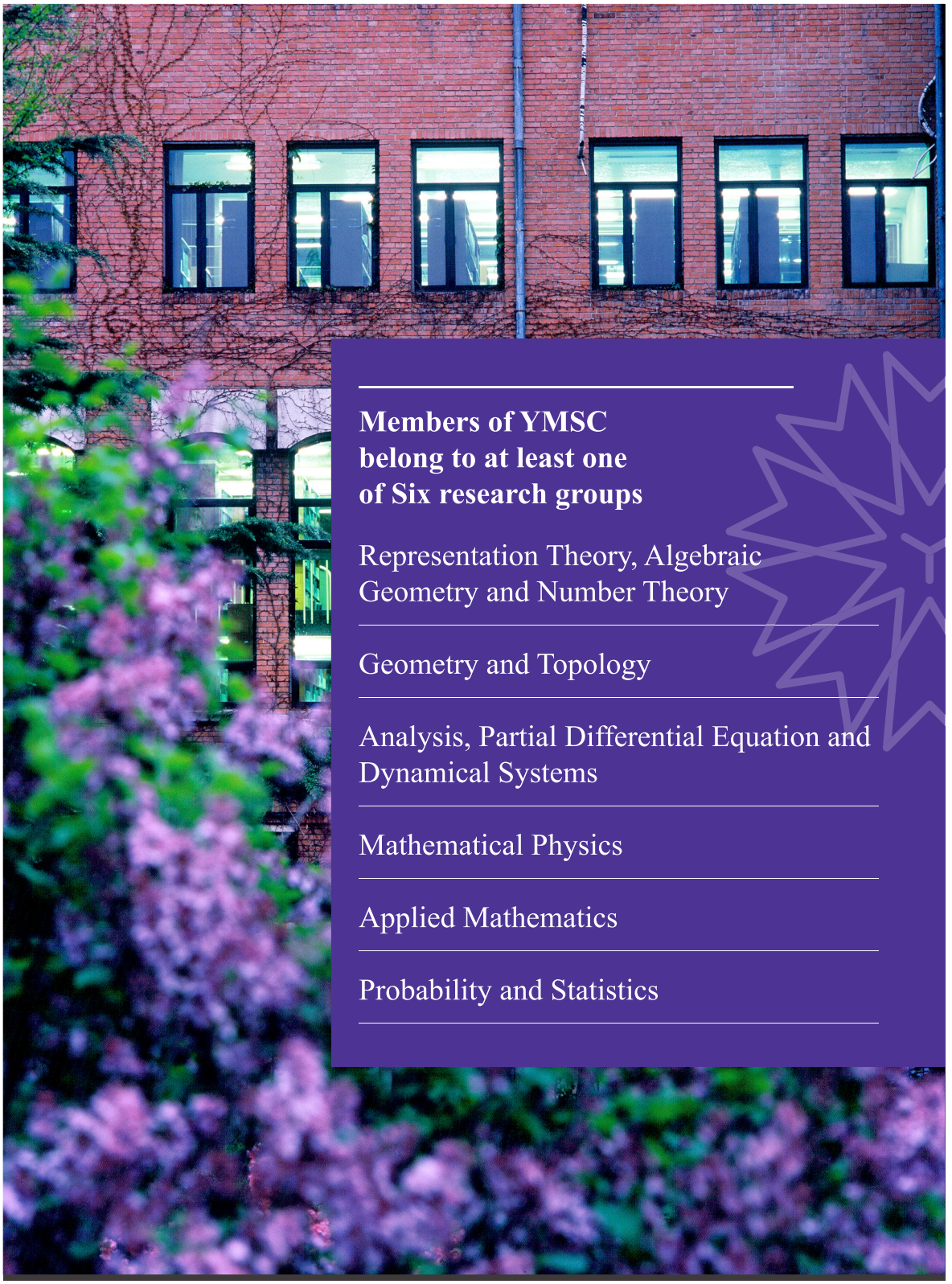
8 Zhu, J., Zhang, Q., Zhang, H. *et al*. A minority of final stacks yields superior amplitude in single-particle cryo-EM. *Nat Commun* 14, 7822 (2023). https://doi.org/10.1038/s41467-023-43555-x

9 Leslie F. Greengard, Shidong Jiang, Manas Rachh, and Jun Wang. A New Version of the Adaptive Fast Gauss Transform for Discrete and Continuous Sources. SIAM Review 2024 66:2, 287-315. https://doi.org/10.1137/23M1572453

10 Yi, J., Ye, W., Gottesman, D. *et al.* Complexity and order in approximate quantum error-correcting codes. *Nat. Phys*. 20, 1798–1803 (2024). https://doi.org/10.1038/s41567-024-02621-x

11 Chen, Lin and Ji, Kaixin and Zhang, Haochen and Shen, Ce and Wang, Ruoshui and Zeng, Xiangdong and Hung, Ling-Yan. CFT*D* from TQFT*D*+1 via Holographic Tensor Network, and Precision Discretization of CFT2. Phys. Rev. X 14, 041033. https://doi.org/10.1103/PhysRevX.14.041033

12 Weixiao Sun, Fuchuan Wei, Yuguo Shao and Zhaohui Wei. Sudden death of quantum advantage in correlation generations.Sci. Adv.10,eadr5002(2024). DOI: 10.1126/sciadv.adr5002



Members of YMSC belong to at least one of Six research groups

Representation Theory, Algebraic Geometry and Number Theory

Geometry and Topology

Analysis, Partial Differential Equation and Dynamical Systems

Mathematical Physics

Applied Mathematics

Probability and Statistics

Representation Theory, Algebraic Geometry and Number Theory

This group conducts research in algebraic and geometric representation theory, category theory, I-adic cohomology and applications, moduli spaces, Hodge theory, singularity theory, and arithmetic geometry.

Professors	Caucher Birkar, Fu Lei,Qiu Yu, Shan Peng, Sheng Mao, Zhu Yihang
Associate Professors	Diao Hansheng, William Donovan, Xu Bin
Assistant Professors	Dylan Allegretti, Chen Lin, Du Heng, Fan Yu-Wei, He Xiang, Hu Yueke, Li Penghui, Li Yongxiong, Koji Shimizu, Su Changjian, Wang Chengxi, Yang Yilong, Yu Chenglong, Zhang Dingxin, Zheng Zhiwei, Zhou Yu
Postdoctoral Researchers	Benjamin Yamin Zhou, Besson Marc Julien, Bongiorno Federico, Lamarche Alicia Mae, Otani Takumi, Sahoo Satyabrat, Theodoros Stylianos Papazachariou, Chen Fei, Chen Yuewen, Cheng Xiaojiang, Chi Wenhao, Jia Boming, Jia Jia, Jiao Junpeng, Li Huihui, Li Nianzi, Li Pengcheng, Li Shang, LinXiaojin, Liu Hexu, Meng Cheng, Wang Jianping, Wang Gaoming, Wang Qi, Wu Haoyu, Xu Shi, Zhang Xucheng, Zhao Qixian

Geometry and Topology

Researchers in this group cover a broad range of topics, including differential geometry, geometric analysis, Teichmüller theory, low-dimensional topology, high-dimensional manifold topology, and complex geometry.

Professors	Kenji Fukaya, Akito Futaki, Lin Yong, Vladimir Markovic, Wu Yunhui, Yang Xiaokui
Associate Professors	Lin Jianfeng, Xiao Jian
Assistant Professors	Chen Weiyan, Gao Honghao, Yi Huang, Sun Weifeng, Zhu Zhifei
Postdoctoral Researchers	Choudhury Diptaishik, Gupta Shubham, Kadyan Monu, Shanon Rubin, Telpukhovskiy Ivan, Deng Jialong, Fan Shuanghe, He Xiang, Hu Jiahao, Hu Jinjin, Niu Weizhe, Qing Chenghao, Sun Haotian, Wang Daxun, Zhang Lei

Analysis, Partial Differential Equation (PDE) and Dynamical Systems

Members of this group study the evolution of phase spaces, both finite and infinite dimensional, of ordinary and partial differential equations, along with dynamical systems, including their interactions with areas of physics such as general relativity and hydrodynamics.

Professors	Chen Zhijie, Yitwah Cheung
Associate Professors	Jin Long, Jing Wenjia, Wang Xuecheng
Assistant Professors	Gui Bin, Lan Yang, Zhang Cheng
Postdoctoral Researchers	Zhang Jingxuan, Artiles Calix Albert Alejandro

Mathematical Physics

This interdisciplinary group has broad interests in the relationship between mathematics and physics, together with their applications. Research in this group concerns topics as diverse as: superstring theory, gauge/gravity duality, supersymmetric theories and their applications in geometry; category theory and topological order in condensed matter physics; operator algebras and quantum computation; and machine learning in mathematical physics.

Professors	Ling-Yan Hung, Liu Zhengwei, Nicolai Reshetikhin, Song Wei, Zheng Hao
Associate Professors	Babak Haghighat, Yan Wenbin, Zhou Jie
Assistant Professors	Chi-Ming Chang, Dawei Ding, Guo Hao, Robert McRae Harold, Liu Ziwen, Wang Qingrui, Wei Zhaohui, Junya Yagi
Postdoctoral Researchers	Arenas Henriquez Gabriel Dario, Bason Davide, Bishal Deb, Boujakhrout Youssra, Elmi Mohamed Abdulwahid Jama, Holden Jack David, Kohli Ben Michael Miloud, Kolekar Kedar Shrikrishna, Nikolaos Angelinos, Santilli Leonardo, Sarthak Duary, Shim Myungbo, Sugimoto Shoma, Zhao Roy, Chen Liangyu, Hao Pengxiang, Jin Anran, Liu Han, Liu Sinong, Ma Guorui, Wang Hao, Wei Xingyue, Xu Xinyu, Yu Song

Applied Mathematics

The main research directions include Post-quantum cryptography, Mathematical modeling, Numerical analysis, Numerical solutions to partial differential equations, Computational dynamical systems, Numerical algebra, Inverse problems, Image processing, Large-scale optimization methods, Mathematical theories and computations in material science, Applied analysis, Machine learning theory, Operations and revenue management theory.

Professors	Ma Jie, Shi Zuoqiang, Zhu Yi
Associate Professors	Bao Chenglong, Gan Lin, Zhou Yuan
Assistant Professors	Angelica Aviles-Rivero, He Juncai, Li Hongjie, Li Li, Liu Jinpeng, Liu Shuang, Pang Tongyao, Qiu Lingyun, Su Chunmei, Wang Jun
Postdoctoral Researchers	Eftekhari Tahereh, Li Yueyao, Shi Qingxiang, Wen Jin, Zhang Zhen

Probability and Statistics

Probability studies the mathematical laws of random phenomena. The main research areas include: stochastic analysis, stochastic differential equations, limit theory and statistical physics.

Statistics is the foundation and an essential component data science. The main research areas include: causal inference, missing data, model selection and model averaging, multi-armed bandits, high-dimensional data and machine learning.

Professors	Per Johansson, Wu Hao, Yang Fan (F), Yang Yuhong
Associate Professors	Yang Fan (M)
Assistant Professors	Dong Jinshuo, Gu Chenlin, Jiang Jianping, Wu Yunan
Postdoctoral Researchers	Chen Yuanxing, Cui Bosen, Gao Ziwen, Hu Jie, Huang Xiangyu, Li Yun, Peng Jingfu

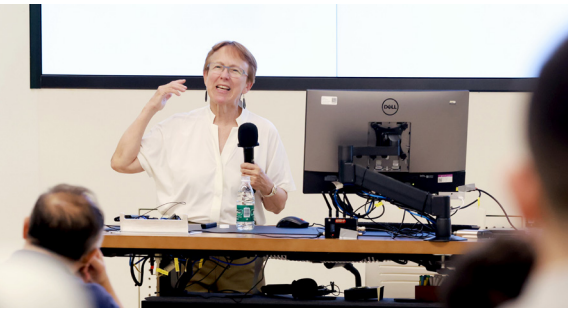
Academic Exchange & Collaboration

YMSC seeks to provide a free and open research atmosphere for all scholars at the Center. Each year, YMSC organizes a wide variety of events, large and small, to facilitate the exchange of scientific ideas.These include regular seminars, research-level courses, and international workshops. Top mathematicians regularly speak at the Modern Mathematics Lectures, Master Forums, and Special Lectures.

Outside the campus, the TSIMF and BIMSA offer dynamic exchange platforms for mathematicians and scientists, often attracting Nobel Laureates, Wolf Prize Winners, and Fields Medalists.

In 2024, YMSC welcomed 71 visiting scholars and maintained a robust schedule of 437 academic events, which included:

Modern Mathematics Lectures Series	21
Special Lectures	42
Distinguished Lectures	12
Seminars	362



INTERNATIONAL CONGRESS OF
BASIC SCIENCE
国 际 基 础 科 学 大 会
求真务实 止于至善 | FOR TRUTH AND BEAUTY

International Congress of Basic Science

On July 14, 2024, the International Congress of Basic Science (ICBS 2024) commenced at Tsinghua University, bringing together nearly 1,000 scientists from 40+ countries and regions to foster collaboration and knowledge exchange. The congress featured 500+ high-level academic talks, 6 satellite symposia, 10+ industry-academia dialogues and public outreach events, with combined online and offline participation exceeding five million - setting new records in scale and impact. The event concluded on July 26 at BIMSA.

The congress honored six preeminent scientists - Andrew Wiles, Richard Hamilton, Edward Witten, Alexei Kitaev, Andrew Chi-Chih Yao, and Leslie Valiant, with 2024 Basic Science Lifetime Awards. In parallel, researchers from academic institutions and corporations across twenty countries received Frontier Science Awards, recognizing 139 seminal papers spanning 42 research directions in mathematics, theoretical physics, and theoretical computer and information sciences.

The congress assembled laureates of the Fields Medal, Turing Award, Nobel Prize, Shaw Prize, Wolf Prize, and Dirac Medal, alongside 80+ members of national academies and university presidents.

YMSC faculty organized youth-focused initiatives, including the ICBS Undergraduate Thesis Awards and academic poster exhibitions for both university and high school students. Special events including the "Tsinghua Day: Top Talks on Mathematics and Physics" and the "Wisdom Navigator: ICBS Science Outreach Tour" provided unique opportunities for direct interaction between established researchers and the next generation of scientists.

Distinguished Lectures

In 2011, YMSC launched the Master Memorial Lecture Series, dedicated to four distinguished Tsinghua University mathematicians: Shiing-Shen Chern, Loo-Keng Hua, Paolu Hsu, and Chia-Chiao Lin. Additional named lecture series were also established, including the Chen-Ying Chiou Distinguished Lectures and the Yip Shing Yiu and Yip Chia-Chi Sponsorship Lectures. In 2024, the newly established Hermann Weyl Distinguished Lecture Series was launched in honor of his fundamental contributions to mathematical physics, including quantum field theory, general relativity, and quantum mechanics. That same year, several renowned scholars delivered lectures, including Fields Medalist Maxim Kontsevich, U.S. National Academy of Sciences member Kathryn Roeder, American Academy of Arts and Sciences member Bjorn Engquist, and professors David Nadler (University of California, Berkeley), Hiroshi Ooguri (California Institute of Technology), and George Daskalopoulos (Brown University).

YMSC Courses

YMSC offers advanced courses on topics belonging to a wide range of areas, including Algebra, Number Theory, Topology, Geometry and Geometric Analysis, Imaging Science, Computational Mathematics, Applied Mathematics, Mathematical Physics, and Statistics. Visiting scholars to YMSC often offer various other minicourses in their areas of specialty. Recent Developments around the Atiyah-Floer Conjecture, given by renowned geometer Kenji Fukaya, Computational Conformal Geometry, given by Gu Xianfeng. A key part of YMSC's mission is to inspire the next generation of young mathematicians and scientists to take part in basic research. Since 2010, YMSC has offered more than 300 courses that are publicly accessible to students in China and abroad, with many being livestreamed online.

Seminars

YMSC faculty and postdocs host regular seminars in almost 20 mathematical fields, some of which include Geometry, Topology, Algebraic and Complex Dynamics, Number Theory, Probability, Microlocal Analysis and Applications, Quantum Scientific Computation and Quantum Artificial Intelligence and Foundations and Applications of AI.

Postdoc Workshops

The Center hosts several Postdoc Workshops each semester, with the goal of providing a platform for postdoctoral researchers to exchange ideas, report on their research results, and find new opportunities for collaboration. In 2024, a total of 7 postdoctoral academic seminars were successfully held, attracting over 800 participants cumulatively.

Workshops

YMSC also hosts domestic and international workshops and specialised seminars, attracting experts both within China and abroad to discuss the latest developments in mathematics. For example, Professor Caucher Birkar organized the Algebraic Geometry Seminar, the Birational Geometry Workshop, and a workshop on Moduli Spaces in Mathematics. Professor Hao Wu, in collaboration with Peking University, organized workshops on Probability and Related Topics at BIMSA and TSIMF. The Center also held: the Zhongguancun Number Theory Colloquium; a Geometric Representation Seminar; a workshop on the Frontiers of Computational Science; a workshop on SPDEs and Related Fields; a seminar on Homological Algebra of the Infrared and Related Topics.

Modern Mathematics Lecture Series

Modern Mathematics Lecture Series was founded in March 2012. The series invites top international mathematicians to give one-hour lectures each Friday, aiming to introduce the latest research results and the frontiers of mathematics, and to build an important academic platform for Chinese scholars to communicate with their peers at home and abroad. In 2024, more than 30 distinguished scholars gave lectures on their cutting-edge scientific research. Guest speakers include Professor Weng Cho Chew, Member of the U.S. National Academy of Engineering; José Antonio Seade Kuri, President of the Mexican Academy of Sciences; Amnon Neeman, ICM 2022 Invited Speaker and Professor at the University of Milan; Carlos Simpson, Professor at the Université Côte d'Azur, France; Zhenqing Chen, Tenured Professor in the Department of Mathematics at the University of Washington (Seattle); Mikhail Khovanov, Professor at Columbia University, USA; Ruixiang Zhang, Recipient of the Ramanujan Prize and Professor at the University of California, Berkeley etc.

International Congress of Chinese Mathematicians (ICCM)

Launched by Professor Shing-Tung Yau in 1998, the International Congress of Chinese Mathematicians (ICCM), aims to strengthen academic connections between Chinese mathematicians both within China and abroad. Held every 3 years, participants discuss the latest research progress in the Mathematical Sciences, thereby promoting the development of mathematics in China and throughout the world.




Master Forums

The Master Forum was initiated by Professor Shing-Tung Yau in January 2013. So far about 1,650 celebrated scholars in mathematics and related academic fields have participated in the Master Forums, including three Nobel Prize Laureates, seven Fields Medalists, and five Wolf Prize Winners. They have presented about 900 lectures on cutting edge research in mathematics and related disciplines.

Special Lectures

The Special Lecture Series was founded in 2018. Each year, YMSC invites world-renowned scholars in mathematics to give Special Lectures.

2024 Current Developments in Mathematics and Physics Celebrating the 15th Anniversary of Yau Mathematical Sciences Center (YMSC)

The opening ceremony of an international conference on the theme 2024 Current Developments in Mathematics and Physics Celebrating the 15th Anniversary of Yau Mathematical Sciences Center (YMSC) was held on April 3.

Yu Yingjie, member of the Standing Committee of the CPC Beijing Municipal Committee and secretary of the Education Working Committee, extended congratulations on the achievements of the YMSC since its establishment and expresses respect for Shing-Tung Yau's contributions to the development of the center.

Tsinghua University President Li Luming extended congratulations on behalf of the University for the achievements made by the YMSC over the past 15 years in the areas of high-level talent introduction, advanced academic research, mathematics discipline construction, and the cultivation of outstanding mathematical talents.

Academician Shing-Tung Yau, a Fields Medal Winner and YMSC director, reflected on the fifteen-year history of the Yau Mathematical Sciences Center. With the continuous efforts of mathematicians, YMSC now boasts a high-level international faculty team. Through the joint-built Beijing Institute of Mathematical Sciences and Application, the center has further expanded its research field from pure mathematics to the applied mathematics.

Academician Xi Nanhua, as the president of the Chinese Mathematical Society, highly praised the achievements of YMSC.

More than 40 distinguished scholars from top domestic and international institutions, including the member of the Royal Netherlands Academy of Arts and Sciences Eduard Looijenga, the member of the German National Academy of Sciences Leopoldina Jürgen Jost, and Chinese Academy of Sciences Academicians Ngaiming Mok, Zhang Weiping, Zhou Xiangyu, Fang Fuquan, Sun Binyong, Tian Ye, among others, delivered a diverse range of academic presentations at the conference, sharing the latest research advancements in their respective fields and exploring the future of the disciplines.

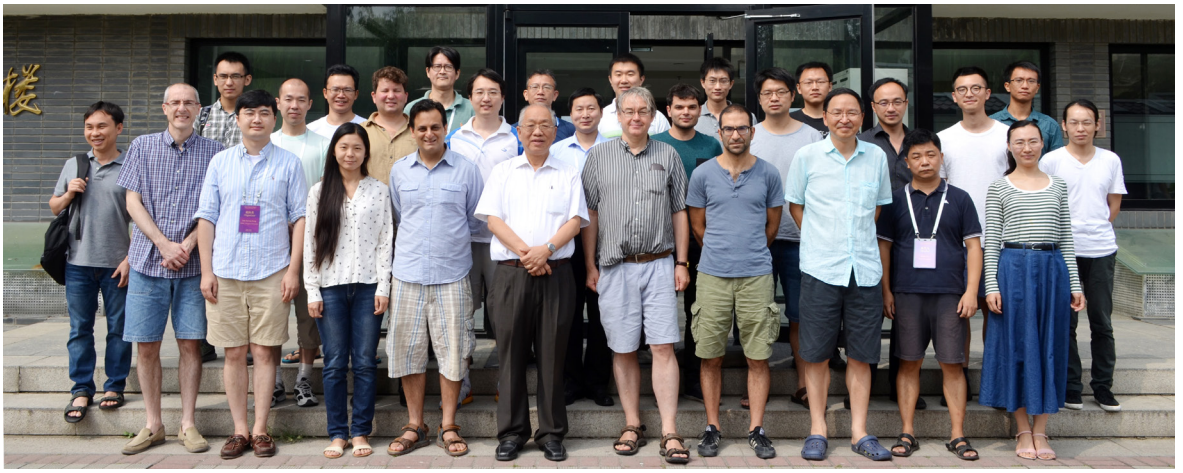
Important Events

Strings 2016, the largest and most important conference in string theory, was held at Tsinghua University.

The 7th International Congress of Chinese Mathematicians (ICCM)

Tsinghua University awarded an honorary doctorate to French mathematician Jean-Pierre Serre and he gave a lecture to students at Tsinghua.

A conference was held to celebrate the 90th Anniversary of the Establishment of Mathematical Disciplines at Tsinghua University.



The Tsinghua Summer Workshop in Geometry and Physics.

International Conference on Forty Years of Calabi-Yau Theory

The 8th International Congress of Chinese Mathematicians (ICCM) and the Awards Ceremony for the ICCM Medal of Mathematics.

2021, 110th Anniversary of Birth of Professor Shing-Shen Chern

The 10th anniversary of Tsinghua Sanya International Mathematics Forum

Academic Resources & Facilities

Academic Journals Publication

In a bid to promote world class academic publishing, YMSC is currently responsible for editing and managing four mathematical journals: Pure and Applied Mathematics Quarterly, Advances in Theoretical Mathematical Physics, Algebraic Geometry and Physics, and Journal of Algebraic Geometry. In addition, YMSC assists in publishing of various expository publications, such as Mathematics, Science, History and Culture, and ICCM Notices.

Faculty serving in PAMQ

Editor-in-Chief: Shing-Tung Yau

Executive Editor-in-Chief: Yitwah Cheung

Editorial Board: Zhengwei Liu, Xiaokui Yang

Faculty serving in ATMP

Editor-in-Chief: Lars Andersson (BIMSA)

Executive Editors: Babak Haghighat, Junya Yagi, Hossein Yavartanoo (BIMSA)

Deputy Editors-in-Chief: Ling-Yan Hung, Zhengwei Liu

Advisor: Shing-Tung Yau

Faculty serving in AGP

Editor-in-Chief: Shing-Tung Yau

Editorial Board: Caucher Birkar, Babak Haghighat, Nicolai Reshetikhin, Mao Sheng, Artan Sheshmani (BIMSA)

Faculty serving in JAG

Editorial Board: Caucher Birkar

Academic Resource Platform

The academic resource platform MathSciDoc has curated a comprehensive collection of over 10,000 high-quality research papers, videos of 35 course lectures and 132 seminars and reports, covering a wide range of fields including pure mathematics, applied mathematics, and computational mathematics. Freely accessible to researchers and students, the platform has become one of the most frequently recommended mathematics-specific paper archive by mainstream search engines in China.

Additionally, a Mathematics Discipline Library is currently under development, with branches located at Zhiyuanzhai and Shuangqing Library, housing a collection of more than 4,000 books.

http://archive.ymsc.tsinghua.edu.cn/

Study at YMSC

Nurturing the next generation of leading mathematicians is a top priority for YMSC. Fields Medalists Shing-Tung Yau and Caucher Birkar, top mathematical physicist Nicolai Reshetikhin, Japan Academy member Kenji Fukaya, Royal Society Fellow Vladimir Markovic, and other first-class mathematicians offer courses for undergraduate and graduate students.

YMSC faculty and postdoctoral fellows serve on Qiuzhen College's Teaching and Academic Degree Committee, while also acting as instructors, thesis advisors, and mentors. The YMSC continuously enhances its core curriculum, offering specialized courses through small-class and tiered instructional approaches specifically designed for the "Yau Mathematical Sciences Leaders Program".

In 2024, YMSC faculty taught 66 undergraduate courses and 75 graduate courses in Qiuzhen College, and offered 27 public courses.

Qiuzhen College

Qiuzhen College was established at Tsinghua University in 2021 with the goal of providing world-class mathematical education, led by its founding dean Professor Shing-Tung Yau. In the same year, the first batch of students was admitted to the "Yau Mathematical Science Leaders Program", while students from the "Yau Mathematical Science Talents Program" (previously established in 2018) would continue their study in the college. Consistent with its founding mission, Qiuzhen College cultivates what Professor Yau describes as "Generals of Science" - future leaders who will advance mathematical and theoretical physics research both in China and worldwide.

Achievements in 2024

The college offered 14 customized preparatory courses for Pre-College Period, 66 undergraduate courses, and 65 graduate courses. It successfully organized 21 sessions of the "Tsinghua Open Problems Seminar(TOPS)," inviting 32 renowned scholars from China and abroad to share cutting-edge research in mathematics and physics, with nearly 1,400 faculty and student participants. The college hosted 3 "Yip Lecture Series", attracting nearly 200 on-site attendees, and 8 "Qiuzhen Traveler's Eyes Presentation" with over 5,000 high school students participating in person. Additionally, the college conducted 7 "Chinese History Study Tours," benefiting nearly 300 students.

The first cohort (Class of 2021) of the "Yau Mathematical Science Leaders Program" has now entered their fourth year, with more than two-thirds of students having passed their doctoral qualification examinations.

Students achieved outstanding results in academic research and competitions:

Two students won the Undergraduate Thesis Award at the 2024 International Congress of Basic Science;

One student received the ICCM Creative Undergraduate Thesis Award;

One student published a paper in the *Moscow Journal of Combinatorics and Number Theory*.

At the 15th Shing-Tung Yau College Student Mathematics Competition, Qiuzhen students won 25 individual awards. Notably:

Wang Zichang and Yang Yicheng (Class of 2021) won the Individual Overall Award gold medal "Shing-Tung Yau Award" and the Individual Award gold medal "Shiing-Shen Chern Award";

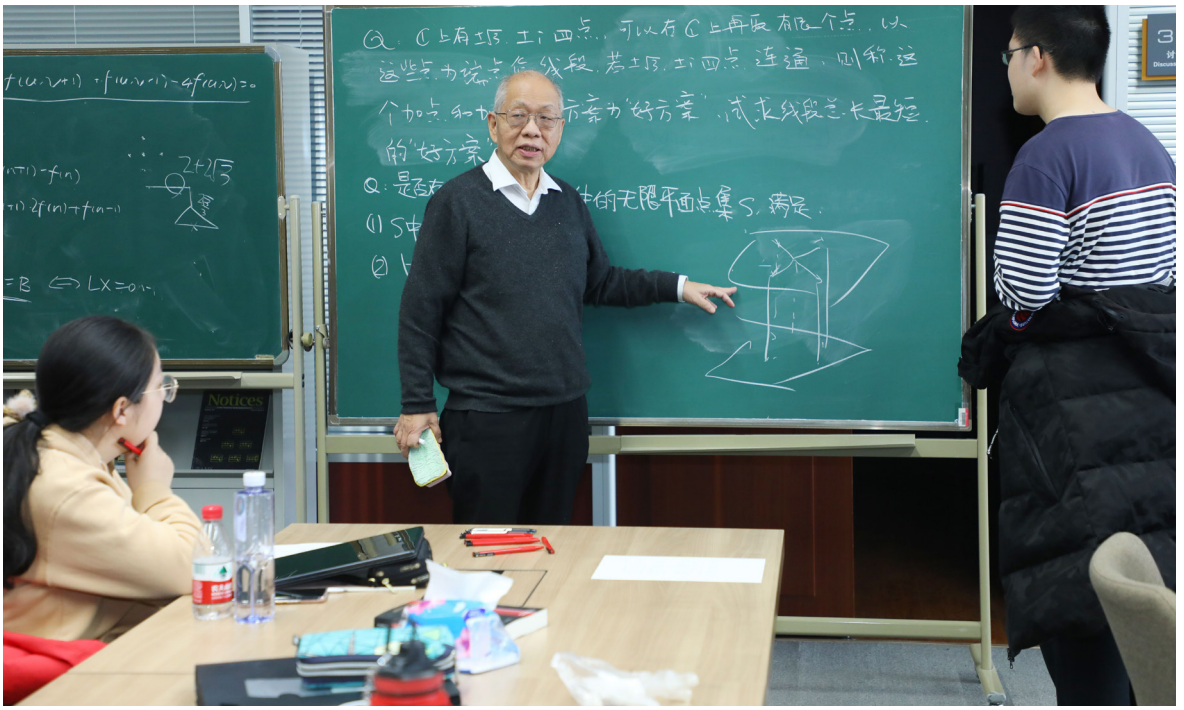
Zuo Junchi (Class of 2021) received the Individual Overall Award silver medal "Shing-Tung Yau Award" and the Individual Award gold medal "Hua Luogeng Award";

Cai Ziyue (Class of 2022) won the Individual Award gold medal "Chia-Chiao Lin Award".

For three consecutive years, Qiuzhen College has organized students to participate in the Putnam Competition simulation tests, with results comparable to top international universities. In 2024, the highest score achieved by Qiuzhen students was equivalent to 13th place globally, with 13 students ranking within the top 50 worldwide.

https://qzc.tsinghua.edu.cn/

Undergraduate Program



Yau Mathematical Sciences Leaders Program plans to recruit from around the world no more than 100 middle school students each year, who show great potential in mathematics in addition to being excellent students. The program includes a three-year undergraduate program, a two-year graduate program, plus a three-year post graduate program leading to a doctorate. It is open mainly to the first and second year Chinese high school students, with some exceptions for outstanding third-year junior high school students. The program also accepts overseas students from the 10th grade up, with exceptions for outstanding 9th graders. The freshmen at Tsinghua University can apply as well.

Yau Mathematical Sciences Leaders Program is open to high school seniors who are eligible to apply for the Unified College Entrance Examination, as well as students who are enrolled in their second year of high school. No more than 30 students will be admitted each year. Applicants are required to take a comprehensive test, and disciplinary competence test. Students in the program are required to complete a four-year undergraduate program in the Mathematical Sciences.

https://www.join-tsinghua.edu.cn/

Graduate Program

Aiming to cultivate excellent mathematical research talents, YMSC started to recruit graduate students in the fields of Pure and Applied Mathematics in 2012. Since 2019, YMSC started to recruite outstanding international students. The Center aims to train international students with a solid theoretical foundation, innovative ideas, global vision, and the ability to conduct independent research and engage in cutting-edge research in mathematics.

Since 2013, YMSC has established a special scholarship for outstanding doctoral students. The selected candidates will receive a full scholarship for three years. In 2022, Qiuzhen College started to accept applications from international students worldwide for doctoral studies at Tsinghua University. It has set up the scholarship with a financial package comparable to the ones offered by other world-class universities, such as Harvard University and Princeton University. Outstanding students will be provided with additional support.

Starting in the fall semester of 2022, the enrolled students will be registered under Qiuzhen College.

Admissions Website: https://yz.tsinghua.edu.cn/

Math Talent Development

YMSC has developed a comprehensive mathematical talent nurturing system, with the aim of developing world-class mathematicians. The system focuses on cultivating interest at the middle school level, consolidating basic skills at the university level, and encouraging innovation at the graduate level. It has reshaped China's mathematics landscape and pushed forward the reform of China's mathematical education.

S.-T. Yau High School Science Award

> *The S.-T. Yau High School Science Award was initiated in 2008 by Professor Shing-Tung Yau.*
> *Hosted by Tsinghua University and organized by YMSC,*
> *it is also recognized by China's Ministry of Education.*

The contest, available to global high school students, covers Mathematics, Physics, Chemistry, Biology, Computer Science, and Economic and Financial Modeling. Rather than traditional exams with standardized answers, students are required to submit original research reports and work in teams. Over the decade, 17,200+ teams from thirty Chinese provinces and regions, as well as overseas areas including North America and Singapore have participated. Based on the careful reviews of 450+ international scientists, approximately 1,000 students from nearly 600 teams have been awarded. More than half of the award-winning high school students have gained admission to world-renowned universities, including Tsinghua University, Peking University, Harvard University, Massachusetts Institute of Technology (MIT), Yale University, and Princeton University. Many have gone on to pursue academic research at these institutions.

S.-T. Yau High School Girls' Mathematics Contest

In order to nurture female mathematicians and encourage more girls to devote themselves to the study of mathematics, YMSC has organized the S.-T. Yau High School Girls' Mathematics Contest annually since 2021. The contest is open to female secondary school students worldwide. The prize of the contest is named after the female mathematician Emmy Noether for her outstanding contributions to the field of mathematics.

The first three contests were successfully held at Tsinghua University High School, Hangzhou No. 2 High School of Zhejiang Province, and the Experimental High School Attached to Beijing Normal University respectively.To date, the contest has attracted nearly 2,000 female students from around the world, identifying many outstanding girls with exceptional mathematical talents. Many gold, silver and bronze award winners have chosen to further their mathematics studies at Tsinghua University's Qiuzhen College.

Huang Xiaowei, Secretary of the Leading Party Members' Group, Vice President and First Member of the Secretariat of the All-China Women's Federation, expressed her hope that students would keep their motherland in mind, maintain their passion and persistence in mathematics, and contribute their youthful energy to advancing the China's modernization and national rejuvenation.

Olympic champion and table tennis Grand Slam winner Deng Yaping believes that gender differences are insignificant, emphasizing that success primarily stems from confidence and determination to excel. She stated, "Young women possess equal capacity to master mathematics, just as China's female athletes have attained remarkable achievements internationally. As more women participate, we will not only 'hold up half the sky' but may well surpass it."

S.-T. Yau College Student Mathematics Contest

The S.-T. Yau College Student Mathematics Contest was initiated by Professor Shing-Tung Yau in 2010. It comprehensively examines college students' basic knowledge and skills in mathematics and includes tests on six subjects: Geometry and Topology, Algebra and Number Theory, Probability and Statistics, Applied, and Computational Mathematics, Analysis and Partial Differential Equations, and Mathematical Physics. The exams are comparable in scope and difficulty to graduate qualifying examinations of the first-class international universities. Since its establishment, more than 23,000 college students in mainland China, Hong Kong, and Taiwan have taken part in the competition. It has played an important role in cultivating Chinese mathematical talents and has become an important reference for the discovery and selection of young mathematical talents and graduate students in mathematics and related disciplines at well-known universities throughout the world.

ICCM Creative Undergraduate Thesis Award

The ICCM Creative Undergraduate Thesis Award aims to encourage young students to undertake mathematical research during their undergraduate years, and at the same time discover outstanding undergraduates and creative papers. It was presented for the first time at the 9th International Congress of Chinese Mathematicians (ICCM) in 2022.

ICCM Best Thesis Award

The ICCM Best Thesis Award (formerly the New World Mathematics Award) was originally founded by Dr. Kar-Shun Cheng, Chairman and Executive Director of New World Development Company Limited, and Professor Shing-Tung Yau in 2007. The goal of the award is to encourage outstanding students of Chinese descent in their pursuit of mathematical truth.

The prize is awarded every three years to bachelor, master, and Ph.D. mathematics graduates of Chinese descent from around the world who have completed or defended their theses within the previous three years.

The prize has been awarded six times so far, leading to the discovery of outstanding young talents in the fields of Pure and Applied Mathematics, Probability and Statistics, and Biomathematics, among others. More than 1,200 students from a total of more than 250 universities in mainland China, Hong Kong, Taiwan, and overseas have participated in the competition, and 221 have received awards.

ICCM Series Awards

The International Congress of Chinese Mathematicians (ICCM) established and presents the ICCM Medal of Mathematics (formerly the Morningside Medal of Mathematics), the Chern Prize, the John Coates International Cooperation Award (formerly the ICCM International Cooperation Award), the Mathematics Contribution Award (first presented in 2022), the ICCM Best Thesis Award (formerly the New World Mathematics Awards), and the ICCM Creative Undergraduate Thesis Award. These awards aim to recognize outstanding young mathematicians who have made major contributions to Pure and Applied Mathematics. Winners include well-known and influential Chinese mathematicians such as Jun Li, Sijue Wu, Ye Tian, Wei Zhang, Zhiwei Yun, Xinwen Zhu, and Jian Ding, among others.

In 2024, Associate Professor Jianfeng Lin received ICCM Kevin Bao Best Paper Award; Assistant Professor Lin Chen received ICCM Graduate Thesis Award; Graduate Student Quan Situ, under the guidance of Professor Peng Shan, received ICCM Graduate Thesis Award; Professor Yunhui Wu received ICCM Distinguished Paper Award.

Affiliated Institutions

Department of Mathematical Sciences, Tsinghua University

The Department of Mathematical Sciences at Tsinghua University was founded in

1927

Many of China's early mathematicians, such as Qinglai Xiong and Wuzhi Yang, once taught here. In its long history, it has cultivated many world-class mathematicians, including Pao-Lu Hsu, Luogeng Hua, and Shiing-Shen Chern. The department now covers a wide range of mathematical subjects, with comprehensive bachelor's, master's, doctoral, and postdoctoral programs. It has 92 faculty members currently.

Major research areas include

Algebraic Geometry, Number Theory, Representation Theory, Differential Geometry and Geometric Analysis, Dynamical Systems and Fractal Geometry, Nonlinear Analysis and Differential Equations, Mathematical Physics, Computational Mathematics, Operations Research, Probability Theory and Statistics, Financial Mathematics, and Interdisciplinary Mathematics.

https://math.tsinghua.edu.cn/

Beijing Institute of Mathematical Sciences and Applications

Beijing Institute of Mathematical Sciences and Applications (BIMSA), established in June 2020, is a mathematics research institution co-sponsored by the Beijing Municipal Government and Tsinghua University. BIMSA is committed to strategic and fundamental research in all areas of mathematics, the frontiers of physics, computer science, finance, and other cross-disciplinary fields. Its research focus is 75% on Applied Mathematics and 25% on Pure Mathematics.

Till the Spring 2025 semester, BlMSA has held 587 courses.organized 117 seminars and conferences, including the International Congress of Basic Science, along with 3359 lectures. By May 2025, the Institute

has a total of 178 full-time researchers, including 69 international scholars from 22 different countries. The institute has established 12 research teams across various areas such as Pure Mathematics, Theoretical Physics, Applied Mathematics, Blockchain, Al and Digital Economy etc.. Over 20 YMSC professors hold seminars at BlMSA regularly.

Tsinghua Sanya International Mathematics Forum (TSIMF)

The Tsinghua Sanya International Mathematics Forum (TSIMF) was initiated and proposed by Professor Shing-Tung Yau. With support from Tsinghua University and the Sanya City Government, TSIMF aims to develop an exchange platform for mathematical talents from China, Asia, and around the world. It hopes to provide a favorable environment for creative research and scientific breakthroughs in mathematics and other disciplines. Located on Tsinghua Road, Tianya District of Sanya, Hainan Province, it is Asia's first high-level academic conference center.

After more than a decade of development, TSIMF has held more than 3,000 seminars and conferences, covering Pure Mathematics, Applied Mathematics, Statistics,

Theoretical Physics, Applied Physics, as well as other major cross-disciplinary fields. Many distinguished scholars from top international institutions have visited here, including three Nobel Prize Laureates and ten Fields Medalists.

http://www.tsimf.cn/

Global Partnerships

To date, YMSC has established Memoranda of Understanding (MoUs) with departments at over 30 of the world's leading universities and research institutions, including Harvard University, Stanford University, Caltech, the University of Oxford, the University of Cambridge, Imperial College London, and the University of Southern Denmark.

In 2022, Tsinghua University and Imperial College London launched a partnership in algebraic geometry through the signing of a Memorandum of Understanding (MoU). This significant academic initiative is jointly led by distinguished mathematicians from both institutions: Fields Medalist Professor Caucher Birkar from Tsinghua University, alongside Imperial College's renowned scholars Professor Richard Thomas, recipient of the Oswald Veblen Prize in Geometry, and Professor Paolo Cascini, winner of the Moore Research Article Award.

The agreement supports a broad range of academic collaboration, including regular faculty and student exchanges, as well as joint postdoctoral training initiatives. This strategic partnership aims to enhance Tsinghua University's global presence in mathematical research and education, while fostering a vibrant, collaborative research environment between the two world-class institutions.