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

2025 国际基础科学大会

INTERNATIONAL CONGRESS OF BASIC SCIENCE 2025

新闻发布会

2025 年 3 月 21 日

2025 国际基础科学大会组委会

Website:www.icbs.cn

国际基础科学大会

International Congress of Basic Science

国际基础科学大会(简称 ICBS)于 2023 年首次举办，是国际基础科学领域的顶级学术盛会，重点围绕数学、物理、信息科学和工程三大基础科学领域展开学术研讨和交流。大会颁发基础科学终身成就奖以及前沿科学奖。其中，基础科学终身成就奖是中国颁发的首个基础科学领域国际大奖。第三届大会将于今年 7 月在北京举行。

著名数学家、国际基础大会主席丘成桐先生表示：“国际基础大会汇聚了基础科学领域的全球顶级科学家，旨在搭建一个开放、包容的学术交流平台，激发青年学者设立远大的科研目标，深化青少年对国际前沿科学的认知与理解，持续推动基础科学领域的国际合作，促进全球基础科学的持续进步和繁荣发展，为实现科技强国的目标贡献力量。”

About ICBS

The inaugural International Congress of Basic Science (ICBS) , themed "Advancing Science for Humanity", was held in Beijing in 2023. This historic event marked the first international congress for basic science wholly conceptualized and hosted within China. It brought together leading scientists from around the world in an effort to promote collaboration and knowledge exchange. The Congress focuses on three branches of basic science: Mathematics, Physics, and Information Science and Engineering. The 2025 session, scheduled for mid-July, will be the third ICBS congress.

Shing-Tung Yau, Chairman of the ICBS, initiated the congress in response to President Xi Jinping's call for enhanced international cooperation and collaboration to address global development challenges. The ICBS aims to provide a robust platform for scholars from all nations to communicate, establish partnerships, and engage in interdisciplinary dialogue, with the ultimate goal of advancing science for ICBS the betterment of humanity. The congress also seeks to raise the profile of basic sciences and inspire the next generation of young researchers and students.

基础科学终身成就奖

「基础科学终身成就奖」设立于 2023 年，旨在表彰在数学、物理、信息科学和工程三大基础科学领域发挥根本性推动作用、做出杰出贡献且具有独创精神的科学家，他们的工作在过去三十年甚至更长时间内深刻地影响了学科发展。

该奖项面向全世界，不限国籍、性别、种族和年龄。

国际基础科学终身成就奖通过表彰基础科学领域重大进展，旨在鼓励科学家坚持勇于探索、追求真理的科学精神，吸引更多青年学子热爱基础科学、致力投身基础科学研究。

Basic Science Lifetime Award (BSLA)

Established in 2023, the Basic Science Lifetime Award (BSLA) honors extraordinary scientists whose work in basic science have been both outstanding and innovative and have, over the course of the past thirty years or more, brought about fundamental change in his or her discipline.

This top global prize for basic science has no restrictions on nationality, sex, race or ethnicity, or age.

The Basic Science Lifetime Award, by recognizing great advances in fundamental science, attempts to encourage scientists to remain bold and curious in their scientific spirit of study and pursuit of the truth, and to attract more young students to love and devote their energy to research in basic science.

【新闻稿】

2025 国际基础科学大会新闻发布会在京举行

丁肇中等六位科学家荣获基础科学终身成就奖

2025 基础科学终身成就奖、前沿科学奖揭晓

7 月在京举办颁奖典礼

3 月 21 日上午，2025 国际基础科学大会（ICBS 2025）新闻发布会在清华大学举行，公布 2025 年度基础科学终身成就奖及前沿科学奖获奖名单，诺贝尔奖得主**丁肇中**（Samuel Chao Chung Ting）、**朱棣文**(Steven Chu)、**戴维·乔纳森·格罗斯**(David Jonathan Gross)，图灵奖得主**罗伯特·恩德雷·塔扬**（Robert Endre Tarjan）、菲尔兹奖得主**森重文**（Shigefumi Mori）以及沃尔夫奖得主**乔治·卢斯蒂格**（George Lusztig）六位国际知名科学家荣膺 2025 年度基础科学终身成就奖。

ICBS 主席丘成桐院士，图灵奖、2024 基础科学终身成就奖得主姚期智院士，菲尔兹奖得主、清华大学教授考切尔·比尔卡尔，中国科学院院士王贻芳等知名学者出席新闻发布会，深度解读基础科学终身成就奖获奖者的开创性贡献。

基础科学终身成就奖（Basic Science Lifetime Award）于 2023 年设立，旨在表彰在数学、物理、信息科学和工程三大基础科学领域发挥根本性推动作用、做出杰出贡献且具有独创精神的科学家，他们的工作在过去三十年甚至更长时间内深刻地影响了学科发展。获得 2025 年度基础科学终身成就奖的六位杰出科学家，均在各自领域取

得了里程碑式的成就，激励了一代又一代科学家不断突破科学的边界。

数学领域终身成就奖获奖者**森重文**曾任国际数学联盟（IMU）主席，是该联盟首位亚洲领导人。他最著名的成就是将经典的极小模型理论从代数曲面推广至三维，为高维代数几何研究开辟了崭新的途径。时至今日，极小模型纲领依然是数学研究中活跃且重要的领域。另一位获奖者**乔治·卢斯蒂格**是当代最具影响力的数学家之一，在表示论领域贡献卓著。他提出的量子群典范基概念、Kazhdan-Lusztig 多项式、Deligne-Lusztig 多项式、Lusztig 猜想等，不仅推动了表示论的理论基础，也为几何表示论、数学物理等领域的探索开辟了崭新的途径。

物理领域的获奖者**戴维·乔纳森·格罗斯**是当代最具影响力的物理学家之一，为粒子物理学和弦理论做出了开创性的贡献。他与合作者共同发现了量子色动力学中的渐近自由概念，获得 2004 年诺贝尔物理奖。格罗斯还对弦理论、量子场论以及基本力的统一做出了重要贡献。另一位获奖者、著名华裔物理学家**丁肇中**是实验物理学领域的泰斗，他在高能物理领域取得的突破性研究成果，为人类探索万物和宇宙的基本构成作出了革命性贡献。他最著名的成就是 1974 年发现 J/ψ 介子，这一发现证实了粲夸克的存在，在构建粒子物理标准模型中起到了关键作用。他与合作者也因此获得了 1976 年诺贝尔物理学奖。

信息科学和工程领域的获奖者**朱棣文**也是一位华裔科学家，他是可持续能源解决方案的坚定倡导者，1997 诺贝尔物理奖获得者，首位在美国内阁任职的科学家，曾提出“葡萄糖经济”等创新理念，在原

子物理、生物物理、精密测量和创新能源方面做出革命性贡献。另一位获奖者**罗伯特·恩德雷·塔扬**是 1986 年图灵奖得主，纵横学界、工业界，其在图论算法和数据结构方面的开创性贡献，彻底改变了计算图论领域。塔扬最著名的贡献是高效算法和数据结构的设计与分析，这些算法不仅是计算机科学的基础，还被广泛应用于网络分析、编译器设计等多个领域。

国际基础科学大会组委会邀请世界各国对科学发展最有贡献的学者参与提名基础科学终身成就奖，对符合评选标准的科学家进行提名。丘成桐先生担任评委员会主席，各领域评选委员会经过数轮讨论，最终评选出了 2025 年度 6 位基础科学终身成就奖的获奖者。2025 年度评审委员会委员包括中、美、英、法、德、挪威、日本等各国院士以及诺贝尔、菲尔兹奖、图灵奖、沃尔夫奖、邵逸夫奖等国际奖项得主。

ICBS 2025 Announcement Press Conference Held in Beijing

Six World-Renowned Scientists Honored with Basic Science Lifetime Awards

On March 21, the 2025 International Congress of Basic Science (ICBS 2025) announced its esteemed Basic Science Lifetime Award (BSLA) recipients at a press conference held at Tsinghua University. 6 globally acclaimed scientists, including Nobel laureates **Samuel Chao Chung Ting**, **David Jonathan Gross**, **Steven Chu**，Turing Award winner **Robert Endre Tarjan**, Fields Medalist mathematician **Shigefumi Mori**, Wolf Prize winner **George Lusztig** were recognized for their groundbreaking contributions to Mathematics, Physics, Information Science and Engineering.

The event was attended by Shing-Tung Yau, Chairman of ICBS; Andrew Chi-Chih Yao, Turing Award laureate and 2024 BSLA recipient; Caucher Birkar, Fields Medalist and professor at Tsinghua University; and Wang Yifang, member of the Chinese Academy of Sciences. These luminaries provided in-depth analyses of the 6 awardees' transformative work and its profound impact on their respective fields.

Established in 2023, the BSLA honors extraordinary scientists whose work in basic science have been both outstanding and innovative and have, over the course of the past thirty years or more, brought about fundamental change in his or her discipline. This year's recipients have each achieved landmark breakthroughs that continue to inspire future generations of researchers.

The 2025 BSLA in Mathematics is awarded to

Professor **Shigefumi Mori**

Kyoto University

"For his fundamental contributions to algebraic geometry, the Minimal Model Program, and profound influence in the classification of higher-dimensional algebraic varieties."

Professor **George Lusztig**

Massachusetts Institute of Technology (MIT)

“For his unparalleled contributions to representation theory, and the profound influence of the theory of Deligne–Lusztig varieties, and Kazhdan–Lusztig theory.”

The 2025 BSLA in Physics is awarded to

Professor **David Jonathan Gross**

University of California, Santa Barbara (UCSB)

“For the discovery of asymptotic freedom and other pioneering contributions to elementary particle physics and string theory.”

Professor **Samuel Chao Chung Ting**

Massachusetts Institute of Technology (MIT)

“For his transformative discovery of the J/ψ meson, groundbreaking contributions to space-based research, and visionary leadership in global collaborations in experimental physics.”

The 2025 BSLA in Information Science and Engineering is awarded to

Professor **Steven Chu**

Stanford University

“For his transformative contributions to atomic physics, biophysics, precision measurements, and energy innovations.”

Professor **Robert Endre Tarjan**

Princeton University

“For his pioneering contributions to computer science, invention of novel efficient graph algorithms and data structures, and their profound influence in data science.”

2025「数学领域」基础科学终身成就奖

Basic Science Lifetime Award in Mathematics 2025

森重文

Shigefumi Mori

日本京都大学

Kyoto University

表彰其为代数几何、极小模型纲领做出的基础性贡献，对高维代数簇分类研究产生了深远影响。

For his fundamental contributions to algebraic geometry, the Minimal Model Program, and profound influence in the classification of higher-dimensional algebraic varieties.

“2025 年度数学领域基础科学终身成就奖授予杰出数学家森重文（Shigefumi Mori），以表彰其在代数几何领域的开创性贡献。他的研究重塑了代数几何，激励了一代又一代数学家。”

森重文，1951 年 2 月 23 日生于日本名古屋，是当代最具影响力的数学家之一。1990 年，他凭借在三维代数簇双有理分类领域的开创性工作广受赞誉，并荣获菲尔兹奖。

1978 年，森重文毕业于京都大学并获得博士学位，师从永田雅宜（Masayoshi Nagata），在其指导下完成论文《某些阿贝尔簇的自同态环》（The Endomorphism Rings of Some Abelian Varieties）。职业生涯早期，他曾在哈佛大学、普林斯顿高等研究院、哥伦比亚大学和犹他大学等多个顶尖机构任客座教授。1990 年，他成为京都大学教授，通过研究和指导学生持续在该领域发挥影响。

森重文最著名的成就是将经典的极小模型理论从代数曲面推广至三维。这一工作被称为极小模型纲领（Minimal Model Program），通过引入受控奇点，实现了三维代数簇的分类。他的创新方法为高维代数几何研究开辟了崭新的途径，极小模型纲领至今仍是活跃且重要的研究领域。

此外，森重文还在全球数学界发挥了重要的领导作用。2015 年起，他担任国际数学联盟（IMU）主席，成为联盟首位来自亚洲的领导人。他卓越的领导力推动了数学界的国际合作，为全球数学科学的发展做出了巨大的贡献。

2021 年，森重文被授予日本最高荣誉之一的日本文化勋章，以表彰其对日本数学、文化的卓越贡献。森重文取得了一系列开创性的研

究成果，展现出超凡绝伦的领导力，矢志不渝的推动数学学科发展，成为当代最具影响力的数学家之一。

作为京都大学教授，森重文始终如一地投身于学术指导，倾力培养新一代数学家，其学术传承绵延不绝。他坚定不移地追求卓越、创新与合作，体现了数学精神的至高境界。

森重文是一位具有远见卓识的数学家，是推动学科变革的领导者，激励着一代又一代年轻学者。他的研究成果拓展了人类知识的边界，他的工作加强了全球数学界联结的纽带。特此将 2025 年基础科学终身成就奖授予这位杰出数学家，他的学术成就将持续照亮基础科学的前行之路。

BSLA Announcement

It is with great honor that we recognize Shigefumi Mori, a towering figure in mathematics whose groundbreaking contributions to algebraic geometry have reshaped the discipline and inspired generations of mathematicians. Born on February 23, 1951, in Nagoya, Japan, Mori's journey from a curious student to one of the most influential mathematicians of our time is a story of brilliance, perseverance, and transformative innovation. Renowned for his fundamental work in the birational classification of three-dimensional algebraic varieties, Mori's pioneering research has had a profound impact on the field, earning him the prestigious Fields Medal in 1990.

Mori completed his Ph.D. in 1978 at Kyoto University under the guidance of Masayoshi Nagata, with a thesis titled "The Endomorphism Rings of

Some Abelian Varieties." Early in his career, he held visiting positions at several leading institutions, including Harvard University, the Institute for Advanced Study, Columbia University, and the University of Utah. In 1990, he became a professor at Kyoto University, where he has continued to influence the field through his research and mentorship.

Mori's most celebrated achievement is his contribution to the extension of the classical theory of minimal models, originally developed for algebraic surfaces, to dimension three. This work, known as the Minimal Model Program, allows for the classification of three-dimensional algebraic varieties by introducing controlled singularities. His innovative approach has opened new avenues for research in higher-dimensional algebraic geometry, and the Minimal Model Program remains an active and vital area of study.

In addition to his mathematical contributions, Mori has played a significant role in the global mathematical community. He was elected President of the International Mathematical Union (IMU), becoming the first leader of the organization from Asia. His leadership has helped to promote international collaboration and advance the field of mathematics worldwide.

Mori's accolades extend beyond the Fields Medal. In 2021, he was awarded the Order of Culture, one of Japan's highest honors, in recognition of his exceptional contributions to mathematics and culture. Through his groundbreaking research, leadership, and dedication to advancing mathematical knowledge, Shigefumi Mori has solidified his legacy as one of the most influential mathematicians of the modern era.

As a professor at Kyoto University, Mori has been a dedicated mentor, nurturing the next generation of mathematicians and ensuring that his legacy will endure. His unwavering commitment to excellence, innovation, and collaboration exemplifies the very best of the mathematical spirit.

Today, we celebrate Shigefumi Mori—a visionary mathematician, a transformative leader, and an inspiration to us all. His work has not only advanced the frontiers of knowledge but also strengthened the bonds that unite the global mathematical community. It is with immense pride that we present the 2025 Basic Science Lifetime Award to Shigefumi Mori, a true luminary of our field.

2025「数学领域」基础科学终身成就奖

Basic Science Lifetime Award in Mathematics 2025

乔治·卢斯蒂格

George Lusztig

美国麻省理工学院

Massachusetts Institute of Technology

表彰其在表示论方面无与伦比的贡献，以及 Deligne-Lusztig 簇理论和 Kazhdan-Lusztig 理论的深远影响。

For his unparalleled contributions to representation theory, and the profound influence of the theory of Deligne–Lusztig varieties, and Kazhdan–Lusztig theory.

“2025 年度数学领域基础科学终身成就奖授予杰出数学家乔治·卢斯蒂格(George Lusztig),以表彰其在表示论、代数几何以及相关领域做出的卓越贡献以及由此产生的深远影响。”

卢斯蒂格，于 1946 年 5 月 20 日出生在罗马尼亚蒂米什瓦拉。从一名年轻学生成长为当代最具影响力的数学家之一，卢斯蒂格具有超凡脱俗的才能、异乎寻常的创造力，以及对知识持之以恒的追求。

卢斯蒂格的学术生涯始于布加勒斯特大学，1968 年获得学士学位后，赴美国普林斯顿大学攻读博士学位。在迈克尔·阿蒂亚(Michael Atiyah)和威廉·布劳德(William Browder)的指导下，于 1971 年完成了关于诺维科夫高阶指标(Novikov’s Higher Signature)的博士论文。这一工作展现了他卓越的才华，为此后取得的一系列突破性进展奠定了基础。

卢斯蒂格的重要贡献集中于表示论领域，特别是在代数群、Hecke 代数和量子群的研究之中。20 世纪 70 年代，他与皮埃尔·德利涅(Pierre Deligne)合作发展出德利涅-卢斯蒂格理论，革新了李型有限群表示论，为构造和研究表示论提供了一个强大的理论框架，对数论、代数几何和组合数学等学科也产生了深远的影响。

1990 年，卢斯蒂格提出了量子群的典范基概念，这一突破性进展将表示论与数学、物理的其它研究领域联系在一起。此外，他还提出了 Kazhdan-Lusztig 多项式、Lusztig-Vogan 多项式、关于代数群不可约表示的特征标的 Lusztig 猜想等，对该领域产生了深远的影响。这些成果不仅推动了表示论的基础理论发展，还为几何表示论、数学物理及其他领域的研究开辟了崭新的道路。

作为麻省理工学院阿卜顿·努尔冠名数学教授，他指导了许多学生与合作者，激励他们不断探索数学的前沿。他的讲座和著作深入浅出，以清晰而深刻著称，往往使复杂的理论变得更加易懂。

卢斯蒂格曾荣获众多奖项，包括科尔代数奖（1985 年）、布劳威尔奖章（1999 年）、勒罗伊·斯蒂尔终身成就奖（2008 年）、邵逸夫数学奖（2014 年）和沃尔夫奖（2022 年）。他是美国国家科学院院士、美国艺术与科学院院士、英国皇家科学院院士等多个知名学术机构成员，足以彰显其卓越的成就，及其在数学界的巨大影响。

乔治·卢斯蒂格的工作拓展了数学的疆界，将不同研究领域联结起来，激励了一代又一代的数学家。他的创新精神，对科学的严谨，对知识的不懈追求，令人钦佩，特此将 2025 年基础科学终身成就奖授予数学科学的开拓者——乔治·卢斯蒂格，他的研究成果引发了诸多创新和变革，将持续影响数学学科的发展。

BSLA Annoucement

It is with great honor that we celebrate George Lusztig, a mathematician whose profound and far-reaching contributions have transformed the landscape of representation theory, algebraic geometry, and related fields. Born on May 20, 1946, in Timișoara, Romania, Lusztig's journey from a young student to one of the most influential mathematicians of our time is a testament to his extraordinary intellect, creativity, and dedication to the pursuit of knowledge.

Lusztig's academic journey began at the University of Bucharest, where he earned his undergraduate degree in 1968. He then moved to the United

States to pursue his Ph.D. at Princeton University under the guidance of Michael Atiyah and William Browder, completing his thesis on Novikov's Higher Signature in 1971. This early work showcased his exceptional talent and set the stage for a career marked by groundbreaking discoveries and deep insights.

Lusztig's most celebrated contributions lie in the field of representation theory, particularly in the study of algebraic groups, Hecke algebras, and quantum groups. His pioneering work on the Deligne-Lusztig theory in the 1970s, developed in collaboration with Pierre Deligne, revolutionized the understanding of representations of finite groups of Lie type. This theory provided a powerful framework for constructing and analyzing representations, with profound implications for number theory, algebraic geometry, and combinatorics.

In 1990, Lusztig introduced the concept of canonical bases for quantum groups, a groundbreaking development that connected representation theory to other areas of mathematics and physics. His work on canonical bases, along with his development of the Kazhdan-Lusztig polynomials, the Lusztig-Vogan polynomials and the Lusztig conjecture on characters of irreducible representations of algebraic groups, has had a lasting impact on the field. These contributions not only advanced the theoretical foundations of representation theory but also opened new avenues for research in geometric representation theory, mathematical physics, and beyond.

Lusztig's influence extends beyond his research. As the Abdun-Nur

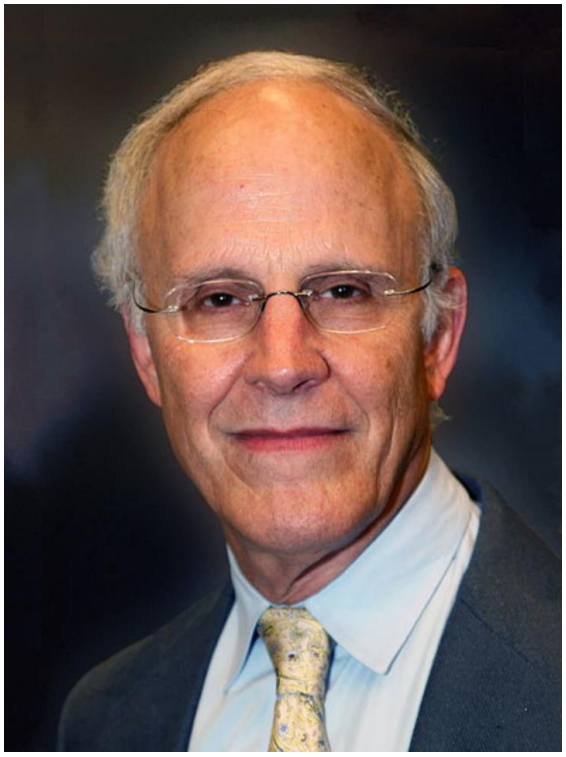
Professor of Mathematics at the Massachusetts Institute of Technology (MIT), he has mentored many students and collaborators, inspiring them to explore the frontiers of mathematics. His lectures and writings are renowned for their clarity and depth, making complex ideas accessible to a wide audience.

Throughout his career, Lusztig has been recognized with numerous prestigious awards, including the Cole Prize in Algebra (1985), the Brouwer Medal (1999), the Leroy P. Steele Prize for Lifetime Achievement (2008), the Shaw Prize in Mathematics (2014), and the Wolf Prize (2022). He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Royal Society, among other distinguished institutions. These accolades reflect not only his intellectual brilliance but also his profound impact on the mathematical community.

George Lusztig's work has redefined the boundaries of mathematics, bridging diverse fields and inspiring generations of mathematicians. His legacy is one of innovation, rigor, and a relentless pursuit of understanding. It is with deep admiration and gratitude that we present the 2025 Basic Science Lifetime Award to George Lusztig, a true mathematical pioneer, whose transformative contributions will continue to shape the future of mathematics for years to come.

2025「物理领域」基础科学终身成就奖

Basic Science Lifetime Award in Physics 2025



戴维·乔纳森·格罗斯

David Jonathan Gross

美国加州大学圣巴巴拉分校

University of California, Santa Barbara

表彰其发现渐近自由概念，为粒子物理学和弦理论做出了开创性的贡献。

For the discovery of asymptotic freedom and other pioneering contributions to elementary particle physics and string theory.

“2025 年度物理领域基础科学终身成就奖授予戴维·乔纳森·格罗斯（David Jonathan Gross）。他是一位声名显赫的理论物理学家，其成就深刻的影响了人类对于自然界基本力的理解。格罗斯于 1941 年 2 月 19 日出生于美国华盛顿特区，毕生致力于揭示宇宙最深层的奥秘，是当代最具影响力的物理学家之一。”

格罗斯的学术之旅始于耶路撒冷希伯来大学，他于 1962 年获得学士学位，后赴加州大学伯克利分校攻读博士学位。在杰弗里·丘(Geoffrey Chew)的指导下，他于 1966 年完成了关于强相互作用高能行为的论文。这项工作开启了他对宇宙基本力以及粒子的毕生热爱与探寻。获得博士学位后，格罗斯在哈佛大学担任初级研究员，并开始崭露头角，成为理论物理学界的一颗新星。

他最著名的成就是 1973 与学生弗兰克·维尔切克(Frank Wilczek)，大卫·波利策(David Politzer)，共同发现了量子色动力学中的渐近自由性质。这一突破性发现表明，将夸克束缚在一起形成质子和中子的强核力在短距离内会变弱。这一洞见使得理论上理解强力成为可能，为进一步完善粒子物理标准模型奠定了基础，同时，也彻底改变了人们对量子场论的理解。因这一卓越贡献，格罗斯、维尔切、波利策获得了 2004 年诺贝尔物理奖。他们的工作已经成为现代物理学的基石，影响了一系列实验和相关理论的发展。

格罗斯还对弦理论、量子场论以及基本力的统一做出了重要贡献。他与杰弗里·哈维(Jeff Harvey)、埃米尔·马丁内克(Emil Martinec)和瑞安·罗姆(Ryan Rohm)共同提出了杂化弦理论，使弦理论成为理解量子引力及统一基本力的核心框架。格罗斯能够将深刻的

理论洞见与实验内涵相结合，成为探索物理学统一理论的核心人物。

格罗斯曾在普林斯顿大学担任托马斯·琼斯冠名数学物理教授。1997 年至 2012 年，担任加州大学圣塔芭芭拉分校卡弗里理论物理研究所（KITP）所长。在他的领导下，KITP 成为全球科学合作的中心，实现了一系列突破性进展，培养了一批新一代物理学家。

因其卓著的成就，格罗斯获得了无数荣誉，包括狄拉克奖章、哈维奖和麦克阿瑟奖。他是美国国家科学院、美国艺术与科学院等知名机构的成员。他的影响力不仅限于研究领域，他还积极推动科学教育与国际合作，倡导科学创新在应对全球挑战中不可或缺的作用。

戴维·格罗斯具有超凡绝伦的智慧，富有远见的领导力，以及对知识的执着追求。他的研究成果推进了当代物理学的发展，激励了无数科学家不断探问宇宙深层次的问题。特此将 2025 年基础科学终身成就奖授予理论物理学巨擘——戴维·格罗斯，他的卓越成就为人类科学发现之旅照亮了方向。

BSLA Announcement

It is with immense pride and admiration that we honor David Jonathan Gross, a preeminent figure in theoretical physics whose groundbreaking contributions have profoundly shaped our understanding of the fundamental forces of nature. Born on February 19, 1941, in Washington, D.C., Gross has dedicated his life to unraveling the deepest mysteries of the universe, earning him a place among the most influential physicists of the modern era.

Gross’s academic journey began at the Hebrew University in Jerusalem,

where he earned his bachelor's degree in 1962. He then pursued his Ph.D. at the University of California, Berkeley, under the guidance of Geoffrey Chew, completing his thesis on the high-energy behavior of strong interactions in 1966. This early work foreshadowed his lifelong fascination with the fundamental forces and particles that govern the cosmos. After completing his doctorate, Gross held a Junior Fellowship at Harvard, where he began to establish himself as a rising star in theoretical physics.

Gross's most celebrated achievement came in 1973, when he and his student Frank Wilczek, in parallel with David Politzer, discovered the property of asymptotic freedom in quantum chromodynamics (QCD). This groundbreaking discovery revealed that the strong nuclear force, which binds quarks together to form protons and neutrons, becomes weaker at shorter distances. This insight made possible a theoretical understanding of the strong force, making it possible to complete the Standard Model of particle physics. It also revolutionized the general understanding of quantum field theory. For this monumental contribution, Gross, Wilczek, and Politzer were awarded the Nobel Prize in Physics in 2004. Their work remains a cornerstone of modern physics, influencing countless experiments and theoretical developments.

Beyond his work on asymptotic freedom, Gross has made significant contributions to string theory, quantum field theory, and the unification of fundamental forces. His discovery of heterotic string theory, with Jeff Harvey, Emil Martinec, and Ryan Rohm, helped establish string theory as a leading framework for understanding quantum gravity and the potential unification of all fundamental forces. Gross's ability to bridge deep

theoretical insights with experimental implications has made him a central figure in the quest for a unified theory of physics.

Throughout his career, Gross has held distinguished positions at Princeton University, where he served as the Thomas Jones Professor of Mathematical Physics, and at the Kavli Institute for Theoretical Physics (KITP) at the University of California, Santa Barbara, where he served as director from 1997 to 2012. Under his leadership, KITP became a global hub for collaborative research, fostering groundbreaking discoveries and nurturing the next generation of physicists.

Gross's contributions have been recognized with numerous accolades, including the Dirac Medal, the Harvey Prize, and the MacArthur Fellowship. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and numerous other prestigious institutions. His influence extends beyond his research, as he has been a passionate advocate for science education, international collaboration, and the role of science in addressing global challenges.

David Gross's legacy is one of intellectual brilliance, visionary leadership, and unwavering dedication to the pursuit of knowledge. His work has not only advanced the frontiers of physics but also inspired countless scientists to explore the deepest questions of the universe. It is with profound respect and gratitude that we present the 2025 Basic Science Lifetime Award to David Gross, a true giant of theoretical physics, whose contributions will continue to illuminate the path of scientific discovery for generations to come.

2025「物理领域」基础科学终身成就奖

Basic Science Lifetime Award in Physics 2025

丁肇中

Samuel Chao Chung Ting

美国麻省理工学院

Massachusetts Institute of Technology

表彰其变革性的发现了 J/ψ 介子，为太空实验做出开创性的贡献，在实验物理全球合作中展现出远见卓识和无与伦比的领导力。

For his transformative discovery of the J/ψ meson, groundbreaking contributions to space-based research, and visionary leadership in global collaborations in experimental physics.

“2025 年度物理领域基础科学终身成就奖授予著名华裔物理学家丁肇中（Samuel Chao Chung Ting）。他在高能物理领域取得的突破性研究成果，为人类探索万物和宇宙的基本构成作出了革命性贡献。”

丁肇中，于 1936 年 1 月 27 日出生在美国密歇根州安娜堡，童年时期在中国度过。他自幼便展露出非凡的科学禀赋，毕生秉持求真精神，以系列开创性的研究推动了物理学的发展，是当代最具影响力的物理学家之一。

他于 1959 年在密歇根大学获得物理学与数学双学士学位，1962 年获得物理学博士学位。他在粒子物理领域的早期研究即彰显了非凡的才智，为后续一系列开创性发现奠定了学术根基。博士毕业后，他先后在欧洲核子研究中心（CERN）和哥伦比亚大学从事研究工作，由此在粒子物理领域崭露锋芒。

1974 年，丁肇中领衔布鲁克海文国家实验室团队取得震惊学界的重大突破——发现 J/ψ 介子。丁肇中团队与斯坦福直线加速器中心（SLAC）的伯顿·里克特（Burton Richter）团队几乎同时完成了这一发现。他们首次通过实验确证了夸克模型预言的基本粒子之一，即粲夸克的存在。J/ψ 介子的发现,不仅证实了第四种夸克的存在，还在构建粒子物理标准模型中起到了关键作用——这一理论框架精确描述了自然界的基本粒子及其相互作用力。基于此项划时代贡献，丁肇中与里克特共同荣获 1976 年诺贝尔物理学奖。

通过主导多项重大国际实验，丁肇中持续推动着高能物理的发展。1995 年，他领导实施阿尔法磁谱仪（AMS）项目，这是一个用于研究太空中的反物质、暗物质和宇宙射线的尖端粒子物理探测器。该设备

于 2011 年成功部署于国际空间站，成为物理学史上最为庞大且复杂的实验之一。在他不遗余力的推动之下，凭借其战略远见，AMS 成为现代天体物理学与宇宙学研究的重要基石，有望深刻改变人类对宇宙的认知。

丁肇中现任麻省理工学院（MIT）托马斯·达德利·卡博特冠名物理学讲席教授，他培养了一大批杰出研究人才，为粒子物理学的发展注入了持久的动力。其学术成就获得国际学界高度认可，先后荣膺欧内斯特·奥兰多·劳伦斯奖、埃林根奖章及美国宇航局卓越公共服务勋章等权威奖项，并当选美国国家科学院院士、美国艺术与科学院院士及中国科学院外籍院士，彰显其横跨东西方科学界的深远影响力。

丁肇中以永不懈怠的探索精神，在微观粒子与宏观宇宙的研究疆域驰骋，不断突破人类认知的极限。他开创性的研究工作重塑了当代物理学的理论框架，激励着无数科学家追求宇宙最深层的奥秘。特此向实验物理学巨匠—丁肇中颁发 2025 年基础科学终身成就奖，他的贡献将继续照亮科学发现的前路。

BSLA Announcement

It is with profound respect and admiration that we honor Samuel Chao Chung Ting, a pioneering physicist whose groundbreaking discoveries have profoundly advanced our understanding of the fundamental building blocks of the universe. Born on January 27, 1936, in Ann Arbor, Michigan, and raised in China, Ting's journey from a determined student to one of the most influential physicists of the modern era is a story of perseverance, intellectual brilliance, and transformative contributions to science.

Ting's academic journey began at the University of Michigan, where he earned his bachelor's degree in physics and mathematics in 1959, followed by a Ph.D. in physics in 1962. His early work in particle physics demonstrated his exceptional talent and set the stage for a career marked by groundbreaking discoveries. After completing his doctorate, Ting held research positions at the European Organization for Nuclear Research (CERN) and Columbia University, where he began to establish himself as a rising star in the field.

Ting's most celebrated achievement came in 1974, when he led a team of researchers at the Brookhaven National Laboratory in the discovery of the J/ψ particle. This groundbreaking discovery, made independently by Ting's team and a group led by Burton Richter at the Stanford Linear Accelerator Center (SLAC), provided the first experimental evidence for the existence of the charm quark, a fundamental particle predicted by the quark model. The discovery of the J/ψ particle confirmed the existence of the fourth quark and played a pivotal role in the development of the Standard Model of particle physics, which describes the fundamental particles and forces of nature. For this monumental contribution, Ting and Richter were jointly awarded the Nobel Prize in Physics in 1976.

Beyond his work on the J/ψ particle, Ting has made significant contributions to high-energy physics through his leadership of major international experiments. In 1995, he initiated the Alpha Magnetic Spectrometer (AMS) project, a state-of-the-art particle physics detector designed to study cosmic rays and search for evidence of dark matter and antimatter in space. The AMS, installed on the International Space Station in 2011, represents one of the most ambitious and sophisticated

experiments in the history of physics. Ting's vision and determination have made the AMS a cornerstone of modern astrophysics and cosmology, with the potential to revolutionize our understanding of the universe.

Throughout his career, Ting has held distinguished positions at the Massachusetts Institute of Technology (MIT), where he is the Thomas Dudley Cabot Institute Professor of Physics. His leadership and mentorship have inspired countless students and collaborators, fostering a legacy of excellence and innovation in the field of particle physics.

Ting's contributions have been recognized with numerous accolades, including the Ernest Orlando Lawrence Award, the De Gasperi Award, and the Golden Plate Award. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Chinese Academy of Sciences, reflecting his profound impact on the global scientific community.

Samuel Ting's legacy is one of intellectual curiosity, relentless determination, and transformative discoveries. His work has not only advanced the frontiers of physics but also inspired generations of scientists to explore the deepest mysteries of the universe. It is with deep gratitude and admiration that we present the 2025 Basic Science Lifetime Award to Samuel Ting, a true giant of experimental physics, whose contributions will continue to illuminate the path of scientific discovery for years to come.

2025「信息科学和工程领域」基础科学终身成就奖

Basic Science Lifetime Award

in Information Science and Engineering 2025

朱棣文

Steven Chu

美国斯坦福大学

Stanford University

表彰其在原子物理学、生物物理学、精密测量学以及能源科技创新等方面做出的变革性贡献。

For his transformative contributions to atomic physics, biophysics, precision measurements, and energy innovations.

“2025 年度信息科学和工程领域基础科学终身成就奖授予杰出物理学家朱棣文（Steven Chu），以表彰其在能源、气候、科技领域做出的开创性贡献。”

朱棣文，1948 年 2 月 28 日出生于美国密苏里州圣路易斯。他既是一位获得诺贝尔奖的科学家，也是国家能源政策的制定者，还是全球可持续能源领域的领军人物。他具有超凡的智慧与创造力，以及应对全球重大挑战的勇气与信念。

朱棣文于 1970 在罗切斯特大学获得数学与物理双学位，随后进入加州大学伯克利分校攻读物理学博士，1976 年完成原子物理学博士论文。他在早期研究工作中便显现出将理论洞见与实验创新相结合的卓越才能，为此后取得一系列突破性发现奠定了基础。

1980 年代，朱棣文在原子激光冷却与捕获原子技术领域做出了开创性工作，成为他最著名的科学成就。这项研究由朱棣文与贝尔实验室的同事共同完成，他们利用激光将原子减速并稳定捕获，将其冷却至接近绝对零度。该技术突破推动了对于原子行为更为精密的研究，为量子物理、原子钟技术以及玻色-爱因斯坦凝聚态的研究提供了坚实的基础。由于这项革命性的贡献，朱棣文与克劳德·科恩-坦诺吉（Claude Cohen-Tannoudji）和威廉·丹尼尔·菲利普斯（William Daniel Phillips）共同获得 1997 年诺贝尔物理学奖。

此外，朱棣文在单分子水平的生物学与高分子物理研究领域，以及能源科学与工程领域均作出了开创性贡献。作为斯坦福大学教授，他率先展开可再生能源、生物能源与能源效率技术研究，重点开发应对气候变化的解决方案。他融合物理学、化学与生物学的跨学科方法，

推动了太阳能技术、电池技术及碳捕获等领域的创新突破。

2009 至 2013 年间，他成为首位在美国内阁任职的科学家，在奥巴马政府担任能源部长。他致力于推动清洁能源技术投资，支持一系列科技研发创新，促进应对全球能源挑战的国际合作。

在其职业生涯中，朱棣文历任斯坦福大学、加州大学伯克利分校及劳伦斯伯克利国家实验室（主任）等重要学术职位。他培养的科研人才已经成为应对全球挑战的中坚力量，他指导的学术梯队持续推动多学科交叉创新。

朱棣文曾荣获诸多殊荣，包括洪堡奖、费萨尔国际奖、康普顿奖章等。他是美国国家科学院院士、美国艺术与科学院院士、美国哲学会会士、英国皇家科学院外籍院士以及其他五个国家科学院或工程院院士。

朱棣文展现出伟大的创新精神、卓绝的领导力，以及应对人类重大挑战的决心与信心。他的工作不仅拓展了科学与工程的疆界，更推动了全球可持续发展和能源科技创新的进程。特此将 2025 年度基础科学终身成就奖授予这位具有远见卓识的科学家，他的贡献将持续影响科学与工程的发展，为人类文明勾勒未来的美好图景。

BSLA Annoucement

It is with great honor that we celebrate Steven Chu, a trailblazer in science and engineering whose groundbreaking contributions have transformed our understanding of energy, climate, and technology. Born on February 28, 1948, in St. Louis, Missouri, Chu’s journey from a curious student to a Nobel laureate, policymaker, and global leader in sustainable energy is a

testament to his extraordinary intellect, creativity, and commitment to addressing the world's most pressing challenges.

Chu's academic journey began at the University of Rochester, where he earned his bachelor's degrees in mathematics and physics in 1970. He then pursued his Ph.D. in physics at the University of California, Berkeley, completing his thesis on atomic physics in 1976. His early work demonstrated a remarkable ability to bridge theoretical insights with experimental innovation, setting the stage for a career marked by groundbreaking discoveries.

Chu's most celebrated scientific achievement came in the 1980s, when he developed laser cooling and trapping techniques for atoms. This groundbreaking work, conducted with his colleagues at Bell Laboratories, allowed scientists to slow down and manipulate atoms using laser light, effectively cooling them to temperatures near absolute zero. This breakthrough enabled the study of atomic behavior with unprecedented precision and laid the foundation for advancements in quantum physics, atomic clocks, and the development of Bose-Einstein condensates. For this transformative contribution, Chu was awarded the Nobel Prize in Physics in 1997, alongside Claude Cohen-Tannoudji and William D. Phillips.

Beyond his Nobel Prize-winning work, Chu has made pioneering contributions in the studies in biology and polymer physics at the single-molecule level, and in energy science and engineering. As a professor at Stanford University, he pioneered research in renewable energy, bioenergy, and energy efficiency, focusing on solutions to combat climate

change. His interdisciplinary approach, combining physics, chemistry, and biology, has led to innovative advancements in solar energy, battery technology, and carbon capture.

Chu's impact extends beyond academia. From 2009 to 2013, he served as the U.S. Secretary of Energy under President Barack Obama, becoming the first scientist to hold this position. During his tenure, Chu championed investments in clean energy technologies, advanced research and development initiatives, and promoted international collaboration to address global energy challenges.

Throughout his career, Chu has held distinguished positions at Stanford University, the University of California, Berkeley, and the Lawrence Berkeley National Laboratory, where he served as director. His mentorship has inspired countless students and researchers, fostering a new generation of scientists and engineers dedicated to solving global challenges.

Chu's contributions have been recognized with numerous accolades, including the Humboldt Prize, the King Faisal International Prize, and the Karl Compton Medal. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the American Philosophical Society, a foreign member of the Royal Society and five other academies of Science or Engineering.

Steven Chu's legacy is one of innovation, leadership, and a relentless

pursuit of solutions to humanity’s greatest challenges. His work has not only advanced the frontiers of science and engineering but also inspired a global movement toward sustainability and energy innovation. It is with deep admiration and gratitude that we present the 2025 Basic Science Lifetime Award to Steven Chu, a true visionary, whose contributions will continue to shape the future of engineering and the world for generations to come.

2025「信息科学和工程领域」基础科学终身成就奖

Basic Science Lifetime Award

in Information Science and Engineering 2025

罗伯特·恩德雷·塔扬

Robert Endre Tarjan

美国普林斯顿大学

Princeton University

表彰其为计算机科学作出的开创性贡献，引入一系列新颖且高效的图算法及数据结构，对数据科学产生了深远的影响。

For his pioneering contributions to computer science, invention of novel efficient graph algorithms and data structures, and their profound influence in data science.

“2025 年度信息科学和工程领域基础科学终身成就奖授予计算机科学家、数学家罗伯特·恩德雷·塔扬（Robert Endre Tarjan），以表彰其在图论算法和数据结构方面的开创性贡献。罗伯特·恩德雷·塔扬，于 1948 年 4 月 30 日出生在美国加利福尼亚州波莫纳。他是一位计算机科学的巨匠，充满了智慧与创新的精神，在信息科学领域贡献卓著，产生了深远的影响。”

塔扬的学术之旅始于美国加州理工学院，于 1969 年获得数学学士学位，于 1972 年在斯坦福大学获得计算机科学博士学位，师从约翰·霍普克罗夫特（John Hopcroft ）、罗伯特·弗洛伊德（Robert Floyd）和唐纳德·克努特（Donald Knuth）。他早期的研究工作聚焦于图论算法和数据结构，此后纵横学界、工业界，擅长将艰深的理论与现实的应用相结合。

塔扬最著名的成就是高效算法和数据结构的设计与分析。他在图论算法方面的工作，尤其是深度优先搜索算法和强连通分量算法，彻底改变了计算图论领域。这些算法不仅是计算机科学的基础，还被广泛应用于网络分析、编译器设计等多个领域。他与约翰·霍普克罗夫特在平面性测试和图分解方面的合作及成果，使他当之无愧的成为学科领袖。

20 世纪 70 年代和 80 年代，塔扬引入了几种开创性的数据结构，包括斐波那契堆，目前仍然是优先队列最高效的实现方式之一；以及伸展树，这是一种能够保证运行效率的自调整二叉搜索树。他的创新成果在算法设计领域产生了深远的影响，为一系列计算问题提供了更快速、更高效的解决方案。塔扬在平摊分析方面的工作，即分析算法

随时间推移的平均性能，也成为了理论计算机科学的基石。

塔扬的影响力远远超出了其研究工作。他曾在美国康奈尔大学、斯坦福大学、普林斯顿大学和 NEC 研究所以及其他机构担任要职，指导了众多学生与合作者。他激励了全球计算机以及数学领域一代又一代科学家，在科学发展的进程中留下了不可磨灭的印记。

塔扬曾获得无数荣誉，1986 年与约翰·霍普克罗夫特共同获得被誉为计算机领域诺贝尔奖的“图灵奖”，表彰他们在算法和数据结构设计与分析方面的基础性贡献。他还曾获得信息科学奈望林纳奖、卡内拉克斯理论与实践奖和布莱兹·帕斯卡奖章。他是美国国家科学院、美国国家工程院、美国艺术与科学院院士、美国哲学学会会士，在理论计算机科学和应用计算机科学领域具有重要影响。

罗伯特·恩德雷·塔扬极富创新精神，秉持科学的严谨性，矢志不渝的追求卓越。他的研究成果不仅重塑了计算机科学，更彻底革新了人类解决计算问题的方式。特此将 2025 年基础科学终身成就奖授予罗伯特·塔扬，一位勇于创新的科学家，他卓越的贡献将持续指引信息科学和工程领域的未来。

BSLA Annoucement

It is with great pride and admiration that we honor Robert Endre Tarjan, a trailblazer in computer science and engineering whose groundbreaking contributions to graph algorithms and data structures have fundamentally reshaped the field of information science. Born on April 30, 1948, in Pomona, California, Robert Tarjan’s journey from a passionate student to one of the most influential figures in information science is a testament to his brilliance, creativity, and lasting impact on the field.

Tarjan's academic journey began at the California Institute of Technology (Caltech), where he earned his bachelor's degree in mathematics in 1969. He then pursued his Ph.D. in computer science at Stanford University under the guidance of John Hopcroft (on sabbatical from Cornell), Robert Floyd, and Donald Knuth, completing his thesis in 1972. His early work on graph algorithms and data structures foreshadowed the profound influence he would have on the field. Tarjan's ability to combine deep theoretical insights with practical applications has been a hallmark of his career.

Tarjan's most celebrated contributions lie in the design and analysis of efficient algorithms and data structures. His work on graph algorithms, particularly his development of depth-first search and strongly connected components, revolutionized the field of computational graph theory. These algorithms are not only foundational to computer science but also widely used in applications ranging from network analysis to compiler design. His collaboration with John Hopcroft on planarity testing and graph decomposition further cemented his reputation as a pioneer in the field.

In the 1970s and 1980s, Tarjan introduced several groundbreaking data structures, including the Fibonacci heap, which remains one of the most efficient implementations of priority queues, and the splay tree, a self-adjusting binary search tree with remarkable performance guarantees. These innovations have had a profound impact on algorithm design, enabling faster and more efficient solutions to a wide range of

computational problems. Tarjan's work on amortized analysis, a technique for analyzing the average performance of algorithms over time, has also become a cornerstone of theoretical computer science.

Tarjan's influence extends far beyond his research. He has held distinguished positions at institutions such as Cornell University, Stanford University, Princeton University, and NEC Research Institute, where he has mentored countless students and collaborators. His ability to inspire and guide the next generation of computer scientists has left an indelible mark on the field.

Throughout his career, Tarjan has been recognized with numerous prestigious awards, including the Turing Award in 1986, often regarded as the Nobel Prize of computing, which he shared with John Hopcroft for their fundamental contributions to the design and analysis of algorithms and data structures. He is also a recipient of the Nevanlinna Prize in Information Science, the Paris Kanellakis Theory and Practice Award, and the Blaise Pascal Medal, among others. Tarjan is a member of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, and the American Philosophical Society, reflecting his profound impact on both theoretical and applied computer science.

Robert Tarjan's legacy is one of innovation, rigor, and a relentless pursuit of excellence. His work has not only advanced the frontiers of computer science but also transformed the way we approach computational problems. It is with deep respect and gratitude that we present the 2025

Basic Science Lifetime Award to Robert Tarjan, a true innovator, whose contributions will continue to shape the future of information science and engineering for generations to come.

ICBS 基础科学终身成就奖得主

2023-2025

	数学	物理	信息科学和工程
2025	森重文 乔治·卢斯蒂格	戴维·乔纳森·格罗斯 丁肇中	朱棣文 罗伯特·恩德雷·塔扬
2024	安德鲁·约翰·怀尔斯 理查德·斯图雷特·哈密顿	爱德华·威滕 阿列克谢·基塔耶夫	姚期智 莱斯利·瓦利安特
2023	大卫·曼福德		阿迪·萨莫尔

ICBS BSLA Laureates

2023-2025

	Mathematics	Physics	Information Science & Engineering
2025	Shigefumi Mori George Lusztig	David Jonathan Gross Samuel Chao Chung Ting	Steven Chu Robert Endre Tarjan
2024	Andew Wiles Richard S Hamilton	Edward Witten Alexei Kitaev	Andrew Chi-Chih Yao Leslie G. Valiant
2023	David Mumford		Adi Shamir

基础科学终身成就奖评委会

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Co-chair	Nikolai	Reshitikhinn	Tsinghua University
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	Andrei	Okounkov	Columbia University
	Richard	Schoen	University of California at Irvine
	Melissa	Liu	Columbia University
	Alessio	Figalli	ETH Zurich
	Nigel	Hitchin	Oxford University
	Mark	Kisin	Harvard University
	Duong	Phong	Columbia University
	Hiraku	Nakajima	IPMU

基础科学终身成就奖评委会

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	吉安·朱迪斯	欧洲核子研究中心（CERN）
	格雷格·摩尔	罗格斯大学
	大栗博司	加州理工学院、IMPU
	彼得·佐勒	因斯布鲁克大学
	梶田隆章	日本东京大学 Kavli IPMU 研究所
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BSLA Committee

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	Alexei	Kitaev	California Institute of Technology
	Subir	Sachdev	Harvard University
	Gian	Giudice	CERN
	Greg	Moore	Rutgers University
	Hirosi	Ooguri	California Institute of Technology, IMPU
	Peter	Zoller	University of Innsbruck
	Takaaki	Kajita	Kavli IPMU, University of Tokyo
	Peter	Jenni	CERN
	Yifang	Wang	The Chinese Academy of Sciences

基础科学终身成就奖评委会

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BSLA Committee

Information Science and Engineering

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	Leslie	Valiant	Harvard University
	Noga	Alon	Princeton University
	Yurii	Nesterov	CUHK (SDS, Shenzhen) and Corvinus University (Hungary)
	Moshe	Vardi	Rice University
	Jerry	Zheng Li	Microsoft Research
	Huajian	Gao	Tsinghua University
	Xiang	Zhang	Hong Kong University
	John	Pendry	Imperial College London

前沿科学奖

国际基础科学大会颁发「**前沿科学奖**」，该奖项设立于 2023 年，旨在表彰过去十年在基础科学领域做出突出学术贡献的科学家们，评选范围涵盖数学、理论物理、理论计算机与信息科学三大基础科学领域。2025 年，前沿科学奖主要围绕 40 个主要方向的基础和应用研究展开。

前沿科学奖奖杯上镌刻的“求真务实 止于至善（Pursue Truth and Strive for Perfection）”不仅是对获奖者的赞誉，更是对所有科学工作者的鼓舞。大会期望通过这一奖项的设立和颁发，激励更多青年学者瞄准基础科学前沿，为人类探索自然奥秘贡献智慧和力量。

登录 ICBS 官网，查看 2025 前沿科学奖获奖名单

Website:www.icbs.cn

2025 ICBS Frontiers of Science Award (FSA)

The Frontiers of Science Award,established in 2023, honors top research, with an emphasis on achievements from the past ten years which are both excellent and of outstanding scholarly value.The award covers three major fields: Mathematics, Theoretical Physics, and Theoretical Computer Science and Information Sciences, with a focus on 40 key areas of basic and applied science research.

The award trophy bears the inscription"Pursue Truth and Strive for Perfection".It aims to inspire more young scholarsto look to the frontiers of basic science, set goals to obtain breakthrough results as early as possible, and contribute wisdom and energy to humankind's study of the mysteries of the natural world.

Visit the official ICBS website to view the list of 2025 FSA winners.

Website:www.icbs.cn

【新闻稿】

2025 国际基础科学大会揭晓前沿科学奖

3 月 21 日，2025 国际基础科学大会前沿科学奖（Frontiers of Science Award)在北京揭晓。148 篇基础科学领域的杰出论文入选，600 余名获奖作者分别来自中国、美国、法国、日本、英国、瑞士、芬兰、韩国、意大利、德国、俄罗斯等 20 多个国家和地区的高校、科研院所及企业。

前沿科学奖旨在表彰过去十年在基础科学领域做出突出学术贡献的科学家们，评选范围涵盖数学、物理、理论计算机与信息科学三大基础科学领域，围绕 40 个主要方向的基础和应用研究展开。来自清华大学、香港中文大学、复旦大学、中国科学院等 13 所国内高校和科研机构的论文作者揽获 17 项前沿科学奖，其中数学领域 8 项，物理领域 1 项，理论计算机与信息科学领域 8 项。

在获奖者中，不乏蜚声中外的顶尖科学家，包括菲尔兹奖得主考切尔·比尔卡尔（Caucher Birkar)、马克西姆·孔采维奇 (Maxim Kontsevich)、玛丽娜·维亚佐夫斯卡（Maryna S.Viazovska)，基础物理学突破奖得主安东·曾苏斯（Anton J.Zensus)、胡布·扬·范兰格费尔德 (Huib Jan van Langevelde)，沃尔夫奖得主贝特朗·哈尔佩林（Bertrand Halperin）等。青年科学家达尼埃莱·塞莫拉（Daniele Semola)、杨镇斌、李鹏辉等崭露头角。多位女性科学家代表如图像处理和机器学习领域知名科学家路易莎·维多利亚（Luisa Verdoliva)、苏·约瑟芬(S.Josephine Suh)等入围奖项。

值得一提的是，全球领先的人工智能研究机构 OpenAI 以及 Meta 旗下人工智能研究团队 FAIR，亦斩获本届前沿科学奖。

评审团由国际知名科学家组成，菲尔兹奖得主雨果·杜米尼尔-科平(Hugo Duminil-Copin)、沃尔夫奖得主美国科学院院士 孙理察(Richard Schoen)等参与数学领域评审；基础物理学突破奖得主阿肖克·森(Ashoke Sen)、美国国家科学院院士加里·霍洛维茨(Gary Horowitz)等参与物理领域评审；哥德尔奖获得者滕尚华（Teng Shang-Hua)、 安德烈·布拉托夫（Andrei Bulatov）以及清华大学教授、智谱 AI 创始人唐杰等参与计算机领域的论文评审。在过去几个月时间里，评审团成员秉持科学、公正的评审原则，严格遵照评审流程和标准，最终评选出 148 篇基础科学领域的杰出学术论文，其中数学领域 86 项，物理领域 26 项，理论计算机与信息科学领域 36 项。

国际基础科学大会主席丘成桐教授表示，基础科学在中国需要更广阔的发展空间，前沿科学奖的评选与颁发，能够助力世界各国科学家了解基础科学领域的前沿成果、认识中国取得的科学成就，推动我国年轻一代不断拓宽视野、树立更高的目标。他希望通过这一奖项的设立，广泛建立起公正、客观的科研成果评价体系，激励年轻学者瞄准前沿科学问题，不断追求科学之美。

前沿科学奖奖杯上镌刻的“求真务实 止于至善（Pursue Truth and Strive for Perfection）”不仅是对获奖者的赞誉，更是对所有科学工作者的鼓舞。大会期望通过这一奖项的设立和颁发，激励更多青年学者瞄准基础科学前沿，为人类探索自然奥秘贡献智慧和力量。

2025 International Congress of Basic Science Unveils Frontiers of Science Award

On March 21, the 2025 International Congress of Basic Science announced the recipients of the Frontiers of Science Award in Beijing. **This year's award recognizes 148 outstanding papers in the field of basic science, with over 600 award-winning authors hailing from universities, research institutions, and enterprises in over 20 countries and regions,** including China, the United States, France, Japan, the United Kingdom, Switzerland, Finland, South Korea, Italy, Germany, and Russia.

The Frontiers of Science Award, established in 2023, honors top research, with an emphasis on achievements from the past ten years which are both excellent and of outstanding scholarly value.The award covers three major fields: Mathematics, Theoretical Physics, and Theoretical Computer Science and Information Sciences, with a focus on 40 key areas of basic and applied science research. **Notably, researchers from 13 Chinese universities and research institutions, including Tsinghua University, the Chinese University of Hong Kong, Fudan University, and the Chinese Academy of Sciences, received a total of 17 awards—8 in mathematics, 1 in theoretical physics, and 8 in theoretical computer and information sciences.**

Among the award recipients are some of the world's most renowned scientists, including **Fields Medalists Caucher Birkar, Maxim Kontsevich, and Maryna S.Viazovska, Breakthrough Prize in Fundamental Physics winners Anton J. Zensus and Huib Jan van Langevelde，and Wolf Prize winner in Physics Bertrand Halperin**. The award also highlights emerging young scientists, such as **Daniele Semola, Yang Zhenbin, and Li Penghui**, female scientists including **Luisa Verdoliva**, a prominent figure in image processing and machine learning, and S. Josephine Suh. leading AI research and deployment companies OpenAI and FAIR (Fundamental AI Research) at Meta are among the recipients of this year's award.

The selection process for the award was conducted by an international panel of distinguished scientists. The mathematics category was evaluated by experts including **Fields Medalist Hugo Duminil-Copin, and Wolf Prize winner Richard Schoen**.Theoretical physics evaluations included

contributions from Ashoke Sen, a Breakthrough Prize winner, and Gary Horowitz, a member of the U.S. National Academy of Sciences. Theoretical computer science reviews were led by Gödel Prize winners Teng Shang-Hua and Andrei Bulatov, along with Jie Tang, a professor at Tsinghua University and founder of Zhipu AI.

Over the past few months, the academic committee has adhered to scientific rigor, fairness, and strict criteria and selected 148 outstanding academic papers: 86 in mathematics, 26 in theoretical physics, and 36 in theoretical computer & information sciences.

Professor Shing-Tung Yau, highlighting the significance of the award, stressed on the importance of broader opportunities for basic science in China. He noted that the Frontiers of Science Award not only provides a global perspective on cutting-edge research in basic science but also serves as a platform for Chinese scientists to showcase their work to the international community. It aims to help China's younger generation gain a broader view of the world's scientific development. Yau expressed his hope that the award will foster a fair and objective research evaluation system, motivate young scholars to seek the essence of science, and set an example for future generations.

The award trophy bears the inscription"Pursue Truth and Strive for Perfection". It aims to inspire more young scholars to look to the frontiers of basic science, set goals to obtain breakthrough results as early as possible, and contribute wisdom and energy to humankind's study of the mysteries of the natural world.