

IMU News 130: March 2025

A Bimonthly Email Newsletter from the International Mathematical Union

Editor: Yoshiharu Kohayakawa, University of São Paulo, Brazil

imu-news-editor@mathunion.org

CONTENTS

1. Editorial: The IMU and the Abel Prize
2. 2025 Abel Prize laureate announced
3. Abel in Bonn 2025
4. 2024 ACM A.M. Turing Award laureates announced
5. MOSS: the Mathematics Online Seminar Series
6. News from the International Commission on Mathematical Instruction (ICMI)
7. News from the Commission for Developing Countries (CDC)
8. News from the Committee for Women in Mathematics (CWM)
9. News from the International Day of Mathematics (IDM)
10. Subscribing to IMU News

1. EDITORIAL: THE IMU AND THE ABEL PRIZE

The International Mathematical Union (IMU) has been heavily involved with the Abel Prize in mathematics since its inception. But before going into more detail on that, let me first say a few words about the prize itself.

The prize is named after the Norwegian mathematician Niels Henrik Abel (1802–1829), who, among many other discoveries, is known for his proof of the insolubility by radicals of the quintic equation. In the time leading up to the centennial of his birth, Norwegian mathematician Sophus Lie (of Lie-group fame) gained European support to establish an Abel Prize in mathematics. The Nobel Prizes had recently been created in Sweden, and Sophus Lie's efforts received strong national support from future Nobel Laureates Bjørnstjerne Bjørnson (literature) and Fridtjof Nansen (peace), as well as the Swedish-Norwegian King Oscar II. However, the untimely death of Sophus Lie in 1899, and the dissolution of the union between Norway and Sweden in 1905, ended all efforts to establish an Abel Prize at that time.

Fast forward one hundred years. Norway had fallen dramatically in the [PISA tests](#) in mathematical skills among school children, and politically the situation became unbearable. The government of Prime Minister Jens Stoltenberg (later Secretary General of NATO) therefore decided to establish an Abel Prize in mathematics with two purposes, the first one being to recognize outstanding achievements in mathematics ("The Abel Prize"), and the second being to stimulate interest in mathematics among the young. The Norwegian Academy of Science and Letters was tasked with the responsibility of awarding the prize.

The first Abel Prize was awarded in 2003 to French mathematician Jean-Pierre Serre, and there have since been a further twenty-six awards made. In setting up the statutes for the prize, the initial idea was to replicate those of the very successful Nobel Prizes, with some important exceptions. And this is where IMU involvement enters the frame. Every year the IMU proposes members for the prize committee, while the European Mathematical Society also proposes a committee member every other year. The committee, whose membership is public, comprises five members, and is chaired by a Norwegian mathematician. This secures a very high scientific level of the prize committee, and a good distribution over time in mathematical areas, geography, and gender. International members serve a two-year term, while the chair serves for four years.

Another big difference to the Nobel Prizes is that nominations for the Abel Prize are open to all, and, in particular, the prize committee is free to consider anyone it chooses. There are really only two constraints – the nominee has to be alive, and one cannot nominate oneself!

The prize committee receives generous input from the international mathematical community in terms of letters of support, assessments, and comparisons before reaching its final decision. As current chair, I can vouch for the fact that there is no shortage of outstanding candidates!

The Abel Prize is awarded annually in May, in Oslo, Norway, and the prize is presented by H.M. King Harald V of Norway. The prize amounts to 7.5 mill NOK (about 700 kUSD or 650 kEUR). Further information can be found on the [Abel Prize website](#).

A scientific presentation of each Abel Laureate can be found in the Springer book series [The Abel Prize](#). All Abel Laureates as well as all Fields and Abacus (Nevanlinna) medalists are invited to attend the annual [Heidelberg Laureate Forum](#) for a one-week gathering in Heidelberg, Germany, and so are 200 young researchers from all over the world. Encourage your graduate students and postdocs to apply!

Key dates for this year:

- Live streaming of the announcement available at the [Abel Prize homepage](#)
- [Award ceremony](#): 20 May at 2 pm CEST in Oslo, Norway

[Helge Holden](#)

[Norwegian University of Science and Technology](#)

[Chair of the Abel Prize Committee](#)

[Former Secretary General of the IMU](#)

2. 2025 ABEL PRIZE LAUREATE ANNOUNCED

The Norwegian Academy of Science and Letters has awarded the [Abel Prize](#) for 2025 to [Masaki Kashiwara](#), of the Research Institute for Mathematical Sciences (RIMS), Kyoto University, and the Kyoto University Institute for Advanced Study (KUIAS), Japan, “for his fundamental contributions to algebraic analysis and representation theory, in particular the development of the theory of D-modules and the discovery of crystal bases”.

Readers are invited to access a [recording](#) of the 2025 Abel Prize Announcement Ceremony on the [Abel Prize YouTube channel](#). In the ceremony, Annelin Eriksen, President of the Norwegian Academy of Science and Letters, announces the laureate, and Helge Holden, Chair of the 2025 Abel Committee, reads the full citation for the winner. This is followed by a popular presentation of Kashiwara's work. The press release, the citation, and a brief biography are available at the [press room page](#) of the Abel Prize website.

Kashiwara was born on 30 January 1947 in Japan. He attended the University of Tokyo, where he met his mentor Mikio Sato, under whom he completed his influential master's thesis in 1970, establishing the foundations of analytic D-Module Theory. In 1971, he moved to the Research Institute for Mathematical Sciences (RIMS) at Kyoto University. After obtaining his PhD from Kyoto University in 1974, he held positions including Associate Professor at Nagoya University and researcher at MIT, before returning permanently to RIMS in 1978. He became Professor Emeritus in 2010 at RIMS, and continues his research at the Kyoto University Institute for Advanced Study.

Kashiwara has received numerous awards and honours. In 1988, he was awarded both the Asahi Prize, alongside Takahiro Kawai, and the Japan Academy Prize. He later became a member of the Japan Academy in 2007. In 2018, he received the Chern Medal from the IMU and the Kyoto Prize. Japan honoured him with the Order of the Sacred Treasure, Gold and Silver Star in 2020. More recently, he received the Frontiers of Science Award of the International Congress of Basic Science twice, in 2023 and in 2024.

3. ABEL IN BONN 2025

The annual symposium following the final meeting of the Abel Prize Committee took place at the Hausdorff Center for Mathematics in Bonn, Germany, on 23 January 2025. For further information, visit [this page](#) and [this page](#). A playlist of the recordings of the talks presented at the symposium is [accessible](#) on the [Abel Prize YouTube channel](#).

4. 2024 ACM A.M. TURING AWARD LAUREATES ANNOUNCED

The Association for Computing Machinery (ACM) has announced Andrew G. Barto and Richard S. Sutton as the recipients of the 2024 ACM A.M. Turing Award, “for developing the conceptual and algorithmic foundations of reinforcement learning”.

The [press release](#) reads: “In a series of papers beginning in the 1980s, Barto and Sutton introduced the main ideas, constructed the mathematical foundations, and developed important algorithms for reinforcement learning—one of the most important approaches for creating intelligent systems.”

Barto is Professor Emeritus of Information and Computer Sciences at the University of Massachusetts, Amherst. He has received many distinctions, including the UMass Neurosciences Lifetime Achievement Award, the IJCAI Award for Research Excellence, and the IEEE Neural Network Society Pioneer Award. He is

a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), and a Fellow of the American Association for the Advancement of Science (AAAS).

Sutton is a Professor of Computing Science at the University of Alberta, a Research Scientist at Keen Technologies, and Chief Scientific Advisor of the Alberta Machine Intelligence Institute (Amii). He has received the IJCAI Research Excellence Award, a Lifetime Achievement Award from the Canadian Artificial Intelligence Association, and an Outstanding Achievement in Research Award from the University of Massachusetts at Amherst. He is a Fellow of the Association for the Advancement of Artificial Intelligence, a Fellow of the Royal Society of Canada, and a Fellow of the Royal Society.

5. MOSS: THE MATHEMATICS ONLINE SEMINAR SERIES

The [European Mathematical Society Young Academy](#) has launched MOSS, the Mathematics Online Seminar Series. This series includes presentations from leading young mathematicians from around the globe. It is primarily intended to inspire the upcoming generation: those who are working towards or have just completed a PhD in mathematics, no matter the field. However, the series is designed to cater for a broad audience and hence senior mathematicians will also find it of interest. For more details, check [this piece](#).

6. NEWS FROM THE INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION (ICMI)

Call for intention to bid to organize and host ICME-17 in 2032. ICME is the largest international conference on mathematics education. It is held every leap year and it is the meeting point for mathematics educators, curriculum developers, mathematicians, researchers in mathematics education, teachers, teacher educators and resource producers.

The three ICMI Awards to recognize outstanding achievement in mathematics education are presented at the ICME Opening Ceremony. The Felix Klein Award and Hans Freudenthal Award were established in 2000 and first presented in 2003. While the Felix Klein Award honors lifetime achievement in mathematics education research, the Hans Freudenthal Award recognizes instead a major cumulative program of research. The Emma Castelnuovo Award, first presented in 2016, acknowledges outstanding achievements in the practice of mathematics education.

On the day before the ICME Opening Ceremony, ICMI hosts a one-day meeting of its General Assembly (GA). Recent ICMEs have also featured a separate Early Researcher Day, usually held before the Congress begins.

ICMI is hereby inviting the ICMI community: ICMI country representatives, national/regional mathematics education and mathematics organizations and academic institutions to consider the possibility of organizing and hosting the International Congress on Mathematical Education in July/August 2032. Visit [this ICMI webpage](#) for more details.

Note. Applications by convention centers, tourist agencies or any other commercial organization will not be considered.

Report on the ICMI Study 27 Conference. The ICMI Study 27 Conference took place at the Ateneo de Manila University, the Philippines, January 22 to 25, 2025. The following is a report by the co-chairs Alf Coles (University of Bristol, UK) and Kate Leroux (University of Cape Town, South Africa).

The activity of ICMI Study 27 is organized around four themes, which were conceptualized in relation to tensions in thinking about mathematics education and the socio-ecological. We anticipated that more standard topics (e.g., teacher education, modelling, curriculum, theory) would emerge within and across themes. The four themes were:

1. Aims of Mathematics Education (led by Nathalie Sinclair and Paola Valero);
2. Scales of Mathematics Education (led by Rochelle Gutiérrez, Mariam Makramalla, and Armando Solares-Rojas);
3. Resources of/for Mathematics Education (led by Marcelo Borba and Vince Geiger); and
4. Mathematics Education Futures (led by Arindam Bose and Catherine Vistro-Yu).

The Discussion Document served as a call for papers for the ICMI Study 27 Conference, hosted by Ateneo de Manila University, the Philippines, January 22–25, 2025. This was the second ICMI Study to take place in a developing country. Each submission was reviewed by at least two International Program Committee (IPC) members, and a maximum of two authors of accepted papers were invited to participate in the Study Conference. Accepted papers were then revised (when necessary) by the authors before being published in the conference Proceedings (available on the ICMI page for ICMI Studies).

The Proceedings contain 63 papers (see Table 1), with contributions by 135 authors from 24 countries across 6 continents: Argentina, Australia, Austria, Brazil, Canada, Colombia, Egypt, Germany, India, Indonesia, Iran, Israel, Italy, Japan, Mexico, Nepal, the Netherlands, New Zealand, Norway, the Philippines, South Africa, Sweden, the United Kingdom, and the United States of America. Early in the process, we committed to representing all accepted contributions to the Study in the Proceedings even if authors were, in the end, not able to attend in person. The number of such cases was relatively small.

Topic	No. of Papers
Aims of Mathematics Education	16
Scales of Mathematics Education	15
Resources of/for Mathematics Education	18
Mathematics Education Futures	14
Total	63

Table 1. Papers in the Proceedings, by theme

Sixty-five Study Conference participants were warmly welcomed by the Local Organizing Committee (LOC) led by Catherine Vistro-Yu and comprising Angela Fatima H. Guzon, Lester C. Hao, Maria Alva Q. Aberin, Errol Matthew C. Garcia, and their team of 14 student assistants. The successful hosting of the Conference in the Department of Mathematics at Ateneo de Manila University was in no small part due to the generosity and hospitality of the University as well as the Philippine Council of Mathematics Teacher Educators (MATTED).

A portion of the paid Conference registration fee was allocated to a Solidarity Fund, which was run according to ICMI principles of supporting participation of individuals from developing countries (as classified by the Centre for Developing Countries, CDC). That allocation, as well as an ICMI contribution, enabled the IPC to disburse a total of €4,150 as partial Conference attendance support amongst 13 participants.

We committed to calculating the carbon cost of air travel to the conference. Based on an estimate of carbon emissions done by the LOC, we arrived at a figure of 70,000 tons CO₂e. There were efforts to reduce the impact of all other activities, with little paper used, no conference bag and additions, and no single use materials for food and drink. The regular practices of members of the Ateneo de Manila University—zero food waste, clean-as-you-go (CLAYGO), and re-use/re-cycling—provided good modelling for our efforts. To avoid additional travel in Manila, the Conference outings took place on foot on the university campus in the form of either a Sustainability Walk or tour of the Ateneo Art Gallery. The balance of the Conference budget will go towards supporting a community-based environmental education initiative in the Philippines.

The Study Conference activities were arranged around Theme Working Group sessions. Here, participants engaged with the existing scholarship on mathematics education and the socio-ecological as represented in all the papers in the Proceedings, oriented towards taking this knowledge forward collectively in the Study Volume.

These sessions were framed by four plenaries. The first plenary, facilitated by the co-chairs, aimed to build the scholarly community comprising participants with diverse experiences of and perspectives on mathematics education and the socio-ecological. Actively, using drawing, writing, and talking, the participants visualized and shared mappings of both their current socio-ecological contexts and their imagined future socio-ecological contexts and, importantly, what their particular Proceedings paper contributed to realizing this future. The mappings were displayed throughout the Conference and served as a productive reference point in the closing plenary during which participants reflected on the progress that had been made within Themes in just 4 days.

The Theme-based engagements across perspectives and contexts in the Working Group sessions were further prompted, challenged, and enriched by two plenary sessions, each taking the form of dialogues between two invited plenary speakers. The first was addressed by Elizabeth (Liz) de Freitas (USA) and Jose (Jett) Ramon Villarín (Philippines) and the second by Adailton Alves da Silva (Brazil) and Pedro Walpole (Philippines). In the first plenary, Jett presented his work at the Manila Observatory and the modelling they do around climate. Among many insights, he raised the importance of an understanding of “rate” as a concept. The presence of CFCs in the atmosphere, for example, is measured in parts per trillion, where differences of only a few hundred ppt, in CFC concentration, entail the difference between a liveable and

unliveable earth. In reflecting on the philosophical dimension of work such as that done by Jett, Liz brought a vital “Science, Technology and Society” (STS) perspective to the Conference. STS points to the limits of thinking based on humanism and the need to think with the more-than-human. Liz’s inclusive materialist ideas bring into question binaries such as nature-culture and prompt us to reflect deeply on the historical and political entailments of the concepts we act with and the need for speculating on alternatives.

The second plenary brought together two scholars’ work with Indigenous communities. Pedro’s work with communities in the Philippines includes the development of regenerative forestry practices, which have now led to those communities being the only ones in the valley with reliable water supplies all year around. Indigenous maps, in this region, involve both space and time relations, and there has been a need to integrate such maps with ones recognized by government in making the case for land and water rights. Adailton described the work he does with the A’uwẽ/Xavante people in Brazil and the “ethnopedagogy” he observes. This ethnopedagogy involves a web of three dimensions: cosmological (the construction of the world), socio-ecological (the construction of space and place), and socio-educational (the construction of being). A clear point of connection was the importance of collectivity in the work of both communities—an idea that featured strongly in the work of the conference across all four of our themes. Adailton spoke in Portuguese and was ably translated by Marcelo Borba. The presence of multiple languages and translation added richness and allowed time for powerful moments of contemplation.

The IPC is now working on the design of the Study Volume. Participants in each Theme are developing three or four chapters to elaborate on the “state of the art” of research into mathematics education and the socio-ecological. Each theme will have an introductory chapter, and we are planning some commentaries. This Study represents something of a new adventure for ICMI in that the focus is on an emerging research area, an area that requires extensive collaboration and representation by mathematics educators in diverse contexts.

[Jean-Luc Dorier](#)
[ICMI Secretary General](#)

7. NEWS FROM THE COMMISSION FOR DEVELOPING COUNTRIES (CDC)

The next International Congress of Mathematicians will take place in Philadelphia, USA, from July 23 to 30, 2026. The call for applications for the ICM 2026 Travel Support Program, which provides financial support to mathematicians from eligible developing countries to attend, is now closed. The program received an impressive number of applications from across all continents. Applicants will be notified of the results in the spring of 2025.

We would also like to remind you about our new [IMU-Simons Research Fellowship Program for Developing Countries](#), generously funded by the Simons Foundation. This new grant program supports mathematicians based in developing countries in undertaking collaborative research at mathematical institutions abroad. The CDC strongly encourages mathematicians and students from developing countries to apply to our calls listed below and to contact us for further details [via email](#).

Grants for institutions

- [Volunteer Lecturer Program](#) (next deadline June 1, 2025, for courses to be held between November 1, 2025, and November 1, 2026)
- [Library Assistance Scheme](#) (no fixed deadline)

Grants for conferences organizers

- [Conference Support Program](#) (next deadline April 15, 2025, for conferences starting after August 15, 2025)

Grants for research visits

- [Abel Visiting Scholar Program](#) (next deadline April 30, 2025, for research visits between September 1 and December 31, 2025)
- [IMU-Simons Research Fellowship Program for Developing Countries](#) (next deadline April 15, 2025, for research visits starting between August 15, 2025, and August 15, 2026)

Grants for graduate students

- [IMU Breakout Graduate Fellowship Program](#) (the 2025 call for nomination is open, with deadline on May 31, 2025)
- [Graduate Research Assistantships in Developing Countries \(GRAID\) Program](#) (the 2025 call for applications is open, with deadline on May 15, 2025)

[Ludovic Rifford](#)

[Secretary for Policy of the CDC](#)

8. NEWS FROM THE COMMITTEE FOR WOMEN IN MATHEMATICS (CWM)

May 12, 2025. CWM is happy to announce that the 2025 edition of the *May12 – Celebrating Women in Mathematics* initiative has been launched and is now available at the [May12 website](#).

May 12 marks the birthday of Maryam Mirzakhani. This date was chosen to celebrate Women in Mathematics in her memory, with the goal of inspiring women worldwide, celebrating their achievements in mathematics, and encouraging an open, welcoming, and inclusive work environment for all.

In this 7th edition of the May12 initiative, arrangements have been made with [Zala Films](#) and director [George Csicsery](#) to offer, between May 1st and May 20th, free screenings of three documentaries: *Journeys of Black Mathematicians: Forging Resilience*, *Journeys of Black Mathematicians: Creating Pathways*, and

Secrets of the Surface: The Mathematical Vision of Maryam Mirzakhani. The films are in English, with subtitles available in Farsi, French, Portuguese, Spanish, and Turkish for all three movies, and also in Italian for *Secrets of the Surface*, thanks to our team of volunteers.

Please visit the [May12 website](#) to request the link to the films and to register your May12 event!

The May12 initiative is sponsored by CWM, with a coordination group that includes representatives from various continental organizations supporting women in mathematics.

[Carolina Araujo and H el ene Barcelo](#)

Chair and Vice-Chair of the IMU [Committee for Women in Mathematics](#)

9. NEWS FROM THE INTERNATIONAL DAY OF MATHEMATICS (IDM)

1. The IDM 2025 School Program (sponsored by the Simons Foundation) was offered to around 200 schools in four languages: English, French, Portuguese and Spanish. It started with virtual training workshops proposing activities on the mathematics of eclipses, on artistic tilings and on artistic polyhedra. Schools then collaborated, exchanged information and posted their creations in the four WhatsApp groups, one in each language.

2. UNESCO and IMU jointly organized the webinar "[Mathematics and Creativity in Art and Education](#)" and more than a thousand participants registered from around the world. Videos of dancer Sadeck Berrabah, pianist Filippo Gorini, and sculptor Theo Jansen were presented. Ingrid Daubechies gave the keynote lecture "*Mathematics Helping Art Conservation*". The webinar also included short 5-minute presentations by mathematicians contributing to art, by artists using mathematics and by educators bringing mathematical art in the classroom. The recording of the webinar will be made available soon on the [IDM website](#).

3. [The Math You Can Touch](#) 2025 Creative Challenge generated around 2700 submissions. The [map](#) can be browsed and a selection of the remixes can be enjoyed in the [galleries](#).

4. More than 900 events were registered from more than 90 countries. A lot of activity took place on March 14 on social media.

5. [Press releases](#) for IDM 2025 have been published in English, French and Spanish. A source copy has been downloaded and translated into several other countries.

[Bet ul Tanbay](#)

Chair of the [IDM Governing Board](#)

10. SUBSCRIBING TO IMU NEWS

To subscribe to IMU News, please visit www.mathunion.org/organization/imu-news and go to the “Subscribe to IMU News” section at the bottom of the page. When you subscribe, you will receive an e-mail message to confirm your subscription so that misuse will be minimized. IMU will not use the list of IMU News emails for any purpose other than sending IMU News, and will not make it available to others.

IMU News is the electronic newsletter of the [International Mathematical Union](http://www.mathunion.org).

More details about IMU News can be found at www.mathunion.org/organization/imu-news
