IMU News 124: March 2024

A Bimonthly Email Newsletter from the International Mathematical Union
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1. EDITORIAL

March 14 was proclaimed as the International Day of Mathematics (IDM) by the General Conference of UNESCO in November 2019. The IDM is administered by the IDM Governing Board (IDMGB), which I have been chairing since the beginning. The website and communications are managed by IMAGINARY, and the success of the IDM comes from the fruitful collaboration between the IDMGB and IMAGINARY, especially Andreas Matt, its Managing Director.

The IDM has now been celebrated for five years. Every year, organizations are invited to post their events on the IDM map. We are proud that there are events all over the world. For me, it is always a pleasure to browse the map and discover many small countries organizing celebrations, including several whose name I did not know!

In 2020, the advertising of the IDM was done mostly through channels related to the IMU and its Adhering Organizations, with many celebrations organized by academician mathematicians. Unfortunately, a large percentage of the events were cancelled because of the burst of the pandemic. At the last minute when the UNESCO launch was cancelled, we decided to hold a live blog on March 14. The live blog was very popular and has remained so for the following IDMs. In 2020, we also organized a challenge with 15-second videos on the theme "Mathematics is Everywhere", and we realized that challenges are very popular.

Hence challenges are occurring every year. In 2021, the challenge asked for posters on the theme "Mathematics for a Better World", in 2022, it asked for photos on the theme "Mathematics Unites", in 2023, it asked for comics on the theme "Mathematics for Everyone", and in 2024 it asked for a Math Remix on the theme "Playing with Math" (also featured on a map). The number of submissions is significant: over 3200 in 2023 and over 2500 in 2024. This puts constraints on the type of challenge proposed. The challenge must not be language dependent, since there are thousands of languages around the world. Also, it must be easy to handle the thousands of submissions arriving just a few days before the IDM.

In 2021, the pandemic was still raging. This forced us to rethink the concept of public gathering and to change the focus to schools and virtual events. Celebrating in the classrooms is a way of ensuring the long life of IDM: making a special activity during the math class on March 14 requires little energy and, if it is fun, teachers are likely to do it every year. To help teachers, we propose activities that they can use in the classroom. But the challenge for the IDM team is to pass the word to teachers in all countries around the world. Two strategies are used for this: the recruitment of national IDM ambassadors, an ongoing process, and the ASPnet network of nearly 12,000 UNESCO Affiliated Schools.

Since 2023, the Simons Foundation sponsors special IDM activities for the Global South, including networking and teacher training workshops. The 2024 flagship event is the IDM school pairing program with around 70 schools. Schools from different countries and using one of four languages (Arabic, English, French and Spanish) are paired for a period of 3–5 weeks around the IDM and are proposed a program focused on mathematical games: first exploring classical mathematical games like the game of Nim, the Ultimate Tic-Tac-Toe, etc, then sharing national games and creating a new game. Teacher training workshops were offered in the four languages.

The IDM is in good shape: the interest and number of events is growing from year to year. My dream is that all schools over the world decide to start celebrating on a yearly basis. In a few countries, the ministry of education already invites all schools to participate (Lybia, Saudi Arabia) and in other countries, like Haiti, IDM Ambassadors lobby to have the IDM added to the school calendar. Will you be able to help with inviting all schools in your country or region to celebrate?

The success of the IDM owes a lot to the devotion of the IMAGINARY team. In addition to Andreas Matt, I want to address special thanks to Eric Londaits, the graphic designer who maintains the website: the increasing popularity of the IDM poses significant programming challenges when it comes to posting events and submissions to the IDM challenge.

Christiane Rousseau
Chair of the *IDM Governing Board*

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

The Commission for Developing Countries (CDC) is actively working on improving its funding solutions and is proud to announce the 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 and to contact us for further detail via email. We remind you that the list of countries eligible for our programs can be found here.

Grants to Institutions

- Volunteer Lecturer Program (next deadline June 1, 2024)
- Library Assistance Scheme (no fixed deadline)

Grants for Conferences and Projects

- [Conference Support Program](#) (next deadline April 15, 2024, for conferences starting after August 15, 2024)

Grants to Individuals

- [Abel Visiting Scholar Program](#) (next deadline April 30, 2024, for visits between September 1 and December 31, 2024)
- [Individual Travel Support Program](#) (next deadline April 15, 2024, for visits starting between August 1, 2024, and August 1, 2025)
- [IMU-Simons Research Fellowship Program for Developing Countries](#) (next deadline April 15, 2024, for visits starting between August 1, 2024, and August 1, 2025)

Graduate Scholarships

- [IMU Breakout Graduate Fellowship Program](#) (the 2024 call for nominations is open until May 31, 2024)
- [Graduate Research Assistantships in Developing Countries (GRAID) Program](#) (the 2024 call for applications is now closed)

[Ludovic Rifford](#)
[Secretary for Policy of the CDC](#)

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

Result of CWM Call 2024. The [CWM funding call for 2024](#) received 39 applications, from several different countries and regions. Some of the selected projects aim at supporting continental networks for women in mathematics, such as the Asian-Oceanian Women in Mathematics (AOWM) Workshop in New Zealand and the series of activities organised by the Gender and Diversity Commission of UMALCA (CGD-Umalca) within the Latin American and Caribbean Congress of Mathematics. CWM is also supporting networking and visibility activities for women in mathematics in Brazil, India, Malawi, Mexico, Namibia and Senegal, and two research workshops geared towards establishing research networks for women, in Burundi and Uganda.

More details on each of these projects can be found [here](#).

May 12, 2024. CWM is happy to announce that the 2024 edition of the *May 12 Celebrating Women in Mathematics* initiative has been launched and is now available [here](#).

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

In this 6th edition of the May 12 initiative, arrangements have been made with *Les Films d'ici* to allow free screenings of two short animated documentaries, "Alicia Boole in the land of polytopes" and "Kovaleskaya's Spinning Top", between May 1 and May 20, 2024.

The coordination group of the May 12 initiative includes representatives from various organisations for women in mathematics. The initiative is currently funded by CWM.

Carolina Araujo and *Hélène Barcelo*
Chair and Vice-Chair of the IMU Committee for Women in Mathematics

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

Latest news about the 27th ICMI Study

Kate Le Roux and *Alf Coles* (IPC Co-Chairs)

The Discussion Document for the 27th ICMI Study — Mathematics Education and the Socio-Ecological — is available on the Study website. This invites scholars, with diverse representation within the ICMI community, and across mathematics education sites and contexts, to submit contributions around four singular, yet related themes (each with subthemes). Each theme prompts engagements with notions of the social and ecological and their interdependencies, and consideration of tensions emerging from mathematics education positionings in these complex relations. Each asks of the thinking and practices of mathematics education specific questions related to: knowledge; curriculum; pedagogy; learning materials; professional development opportunities; philosophy; theory; methodology; and so on. Briefly, the themes and subthemes are:

Theme A. *Aims of Mathematics Education*: Examining the aims of mathematics education; Examining mathematics as a subject of education.

Theme B. *Scales of Mathematics Education*: Relations between the local/global, historical, ecological, and political; Curriculum innovations and different voices located in the socio-ecological; Learning from site-specificities.

Theme C. *Resources for and of Mathematics Education*: What and how resources are/may be used in relation to socio-ecological concerns; How resources are embedded within histories, values, and ideologies.

Theme D. *Mathematics Education Futures*: Contexts and communities of education that can/have yet to be imagined; Knowledges, curriculum and pedagogies that can/have yet to be imagined; Practices and ethics of mathematics education research that can/have yet to be imagined.

The ICMI Study 27 Conference will take place from January 22 to January 26, 2025, in Quezon City, Philippines. Information about the venue, registration, costs, travel, and accommodation will be made available on the [ICMI Study 27 website](#).

Summary of dates:
1. Call for paper submissions: from February 2024
2. Pre-submission support deadline: May 30, 2024
3. Deadline for paper submissions: June 15, 2024
4. Invitations to participate in the Conference mailed: between July 30 and August 15, 2024
5. Registration: opens on July 30, 2024, and closes November 1, 2024
6. Proceedings published online: December 31, 2024
7. Conference opening: January 22, 2025

Discussions from the Conference activity will provide the foundations for invited contributions to an edited volume published open access by Springer as part of the New ICMI Studies Series.

Initiatives of the Brazilian mathematical community regarding the Klein Project

Paolo Piccione (IMU Liaison in ICMI EC, 2019–2026) and *Yuriko Yamamoto Baldin* (ICMI EC Member, 2013–2020)

The Brazilian mathematical community has actively committed itself to the Klein Project, a collaboration between the International Mathematical Union (IMU) and the International Commission on Mathematical Instruction (ICMI), with the mission of developing mathematical resources for secondary school teachers addressing contemporary themes.

Professional PhD program in mathematics with focus on mathematical communication. One pioneering initiative is the creation of a new Professional PhD program in Mathematics, grounded in Mathematical Communication, inspired by the Klein Project being one of its main focuses. This program aims not only to deepen teachers' mathematical knowledge as the core of investigation but also to develop their communication skills, bridging the gap between academic research and teaching practices at the secondary level.

The Klein Project, specifically the development of new "vignettes" — concise and accessible texts on specific contemporary mathematical topics —, stands out as a central activity in this program. Professors and students collaborate to select current themes, develop appropriate didactic approaches for high school teachers, and then draft the vignettes that may impact new designs for secondary school curricula. These vignettes enrich educators' learning and become valuable products of the program to connect mathematics knowledge among distinct educational levels.

The goal is to provide an immersive experience for teachers, connecting everyday mathematics with cutting-edge research and contemporary applications. The Klein Vignettes, starting with familiar concepts, gradually lead readers to a deeper understanding, ultimately illustrating key principles of mathematics. The communication of the results and their consequences is the mainstream of the program's rationale.

Inclusion of the Klein Project in Outreach Activities at a Center for Geometry and Physics in São Paulo.
Another significant initiative comes from a Center for Geometry and Physics based in the state of São Paulo. This center recognizes the transformative potential of the Klein Project in how mathematics is perceived and understood. As a result, it has included the Klein Project in its outreach activities.

By incorporating the Klein Project, the center aims to extend its reach beyond the academic environment, reaching high school students, teachers, and the general public. Outreach activities include lectures, workshops, and events that highlight the importance of contemporary mathematics and its role in solving real-world problems.

These initiatives demonstrate the commitment of the Brazilian mathematical community to enriching mathematical education, establishing a bridge between advanced research and secondary education, thus promoting a deeper and broader understanding of mathematics at all educational levels.

An alternative perspective on the initiatives outlined in the Klein Project by the Brazilian Mathematical Society (SBM) is to highlight the potential for aligning them with the advancement of mathematics education across all levels. This alignment can be achieved through meaningful interactions with various societies and organizations, such as SBEM (Brazilian Society of Mathematics Education), SBMAC (Brazilian Society of Applied and Computational Mathematics), SBHMat (Brazilian Society of History of Mathematics), and others. These entities are actively engaged in mathematics teacher education, making it a focal point of their research efforts. Moreover, there exists an opportunity to broaden the impact of the Klein Project initiated by ICMI-IMU by fostering collaboration with UMALCA and CIAEM-IACME, extending its reach into countries throughout the American continent. This interconnected approach seeks to synergize efforts, creating a cohesive network that propels the collective mission of enhancing mathematics education on a global scale.

Jean-Luc Dorier
ICMI Secretary General

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

1. The 2024 flagship event is the IDM school pairing program within the Global South IDM program sponsored by the Simons Foundation. Around 70 schools from different countries and using one of four languages (Arabic, English, French and Spanish) are paired for a period of 3–5 weeks around the IDM and are proposed a program focused on mathematical games: first exploring classical mathematical games like the game of Nim, the Ultimate Tic-Tac-Toe, etc, then sharing national games and creating a new game. Teacher training workshops were offered in the four languages.
2. The live blog of March 14 shows the diversity and success of many celebrations around the world. Since the beginning of 2024 the IDM website got over 101K unique visitors, including more than 68K unique visitors in March.
3. More than 1800 events were registered from more than 90 countries.
4. UNESCO, IMU and the IDM jointly organized a webinar "Playing with Mathematics for Society", which was attended by 480 people from around the world. This webinar is one of the first activities of the International Decade of Sciences for Sustainable Development 2024–2033, whose website will be launched shortly.

5. The Math Remix Creative Challenge generated around 2500 submissions. The map can be browsed and a selection of the remixes can be enjoyed in the galleries.
6. Press releases for IDM 2024 have been published in English, French and Spanish. A source copy has been downloaded and translated in several other countries.

Christiane Rousseau
Chair of the IDM Governing Board

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6. ABEL PRIZE 2024: MICHEL TALAGRAND

The Norwegian Academy of Science and Letters has awarded the Abel Prize for 2024 to Michel Talagrand of the National Centre of Scientific Research (CNRS), Paris, France, "*for his groundbreaking contributions to probability theory and functional analysis, with outstanding applications in mathematical physics and statistics*".

Readers are invited to access a recording of the 2024 Abel Prize Announcement Ceremony on the Abel Prize YouTube channel. In the ceremony, Lise Øvreås, President of the Norwegian Academy of Science and Letters, announces the laureate, and Helge Holden, Chair of the 2024 Abel Committee, reads the full citation for the winner. This is followed by a popular presentation of Talagrand's work. The press release, the citation, and a brief biography are available at the press room page of the Abel Prize website.

Talagrand was born on 15 February 1952 in France. In 1974 he joined the National Centre of Scientific Research (CNRS) in Paris, and completed his PhD in 1977. His affiliation lasted until his retirement in 2017. He was a member of the Functional Analysis Team of the Institute for Mathematical Sciences, and, from 1985 onwards, research director at CNRS.

Talagrand was elected Fellow of the French Scientific Academy in 2004 and is Chevalier de la Légion d'Honneur since 2011. He was an invited speaker at the ICM in Kyoto (1990) and a plenary speaker at the ICM in Berlin (1998). He has received several awards including the Loève prize (1995), the Fermat Prize (1997) and the Shaw Prize (2019).

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7. CRAFOORD PRIZE IN MATHEMATICS 2024: CLAIRE VOISIN

ICM 2026 Program Committee Chair Claire Voisin has been awarded the Crafoord Prize in Mathematics 2024 by the Royal Swedish Academy of Sciences, "for outstanding contributions to complex and algebraic geometry, including Hodge theory, algebraic cycles, and hyperkähler geometry".

Visit the Royal Swedish Academy of Sciences webpage for the press release of the 2024 Crafoord Prize, where a prize video is available.

Voisin was born on 4 March 1962 in Saint-Leu-la-Fôret and received her PhD in 1986 from the University of Orsay, Paris. In the same year, she joined the National Centre for Scientific Research (CNRS). She is currently a research professor at the Mathematics Institute of Jussieu–Paris Rive Gauche. Voisin was previously a member of the Centre de Mathématiques Laurent-Schwartz of the École Polytechnique, and was the first female mathematician at the Collège de France, where she held the Chair of Algebraic Geometry from 2016 to 2020.

Voisin is a member of the Académie des sciences (France), a Foreign Member of the Royal Society (UK), an International Member of the US National Academy of Sciences and a Foreign International Honorary Member of the American Academy of Arts and Sciences. She was an invited speaker at the ICM in Zurich (1994) and a plenary speaker at the ICM in Hyderabad (2010). She has been awarded numerous prizes, including the Gold Medal of the CNRS (2016), the Shaw Prize in Mathematical Sciences together with János Kollár (2017) and the BBVA Foundation Frontiers of Knowledge Award in Basic Sciences together with Yakov Eliashberg (2023).

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