IMU News 106: March 2021

A Bimonthly Email Newsletter from the International Mathematical Union
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1. EDITORIAL: VERY LARGE ONLINE SEMINARS

One of the new features of the pandemic-stricken world are the very large online seminars, spanning sometimes whole continents, like the African Mathematics Seminar, and sometimes all time zones, as it happened during the Zoom Algebraic Geometry Marathon. IMU News asked the organizers of these two events to discuss their (1) main goals, (2) main achievements and (3) main challenges.

Clearly, events like this are here to stay and IMU News plans more coverage of large online mathematics research activities in the future.

Jared Ongaro, African Mathematics Seminar

Goals. Like all other seminars, we were influenced by COVID-19. However, all can agree this series was long overdue. The continent needed a seminar for the whole of Africa, alternating through the different countries while giving different regions their chance to host the seminar.

The main goal of the African Mathematics Seminar (AfMS) is to provide a platform for building mathematical networks across Africa and to showcase African mathematical talents and opportunities. In practice, this means speakers will mostly hail from Africa, or have a strong research relationship with African mathematics. But not necessarily always; the organizing team includes distinguished speakers every now and then for networking and research exchange with the rest of the world.

Successes. A weekly prestigious seminar for the whole of Africa, bringing International Congress of Mathematicians (ICM) level talks to Africa on current mathematical research.

Challenges. The AfMS takes place online via Zoom in English. Since mathematics instruction in Africa is carried out in other languages as well, we sometimes lock out other great talents on the AfMS platform because of language barriers. Finally, we have different internet connectivity levels across the continent;

this has an impact on some participants, whose connection drops during the seminar, but we hope this will improve greatly in the future.

Ivan Cheltsov, **Zoom Algebraic Geometry Seminar**

Goals. The Zoom Algebraic Geometry Seminar (ZAG) was created at the end of March 2020 when the emergence of the COVID-19 pandemic forced most universities to cease face-to-face activities. Individual departments had to prioritize their response to the pandemic and seminars were swiftly cancelled. A reduced group of algebraic geometers designed ZAG over a week as an urgent intervention to allow dissemination activities in algebraic geometry to continue.

The response was superb with initial talks being attended by well over a hundred people, reaching over 400 at its peak, at Professor David Mumford's talk. As most activities formerly taking place in person shifted online, ZAG's objective was modified slightly, to democratize access to the most recent developments in the field. This is particularly important for researchers in smaller institutions or those without a seminar in algebraic geometry, who can now keep up with the work of colleagues from their laptops.

Successes. It is hard to choose one main achievement. ZAG has brought a large number of algebraic geometers together, with over 1400 subscribers to its mailing lists and many talks being attended by over 100 people. It has also democratized access to research dissemination, both for attending and presenting. Those who could not attend conferences abroad due to funding constraints, teaching or caring responsibilities, can now both attend the seminar regularly at no cost and with little time investment, as well as present at it eventually. The classical East-West divide posed by international transport and visas which restricted interactions to a conference or two a year has now been removed.

Challenges. The main obstacle of ZAG at the moment is probably deciding who should be invited to speak. Even with two talks a week, for each week of the year but one, we still have a full schedule all the way to the summer. We have tried to keep a balance of young researchers (some of them even graduate students) and high-profile ones (including four Fields medallists). Too many talks means that attendance decreases due to fatigue and overload, especially as more events take place online, and it also requires a heavier regular load for the two main coordinators of the seminar (me and Jesus Martinez Garcia). On the other hand, restricting the number of talks would hinder our democratization aim.

A more recent challenge (not exactly an obstacle) is to decide where we want to take ZAG from here and how to prioritize our scarce time resources on related initiatives. For instance, on 1st September 2020, ZAG hosted its first Marathon, with 24 talks in 24 hours over 24 time zones. Shall we repeat this? There are also a couple of planned activities, currently at early stages of development that we hope to be able to make public soon.

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2. A STATEMENT FROM THE IMU IN CONNECTION WITH ICM 2022

The IMU has issued a statement on recent events in Russia and their impact on the ICM in Saint Petersburg in 2022, expressing solidarity with mathematicians involved in recent detainments and arrests in the country. The full statement is available here.

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3. CELEBRATION OF THE [INTERNATIONAL DAY OF MATHEMATICS](#) 2021

Celebrations took place around Sunday March 14, 2021, under the theme [Mathematics for a Better World](#) with a mixture of virtual and onsite events, as well as celebrations in schools: over 700 events from at least 95 countries were posted on the [International Day of Mathematics website](#).

The [Global Online Celebration](#) started on the [IDM website](#) at 00:00 in Oceania and lasted 48 hours. It live-blogged pictures and videos from IDM events worldwide in different languages, posters, announcements and more. Altogether more than 17000 People attended the [Global Celebration](#) on the website. Many more joined by posting on [Facebook](#), [Twitter](#), and [Instagram](#) using the hashtag **#idm314** or tagging the official IDM account.

The main event of the online celebration consisted of a [series of short talks](#) streamed through the IDM website, targeting a general audience, and featuring mathematics and how it can make the world better. There were three sessions in three different languages: English, French, and Spanish with more than 3300, 1700 and 2700 views for the three respective languages. People can still watch the videos from the [Online Celebration](#).

In a project funded by the [Simons Foundation](#), IDM joined hands with partner organizations in three African countries, Algeria, Republic of Congo and Senegal, to plan and organized an [African celebration](#) consisting of a series of online events with panel discussions, talks, interactive workshops, classroom activities, competitions and teacher trainings. The events took place from March 10 to March 26, 2021, and were held in French, English, and Arabic.

The [Mathematics for a Better World Poster Challenge](#) generated 2100 posters. The [gallery](#) features 138 posters: 90 were posted before the IDM and 48 more, celebrating mathematics and the IDM theme, were presented during [Global Celebration of March 14](#) and later added to the gallery.

[Press releases](#) were published in six languages.

Christiane Rousseau
Chair of the [IDM Governing Board](#)

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4. NEWS FROM THE [COMMISSION FOR DEVELOPING COUNTRIES (CDC)](#)

4.1. [IMU-CDC](#) response to the health crisis

The [Commission for Developing Countries](#) in its annual meeting held online in March took stock of its programs during the years 2020 and 2021 in the context of the pandemic and its consequences, and noted the difficulties that are being faced throughout the world—particularly in countries with fewer resources.

Especially for the programs *Conference Support* and *Volunteer Lecturer*, IMU-CDC decided to allow possible expenses for acquisition of material or the payment of services to hold events in the online format. We recommend consulting the details on the programs' webpages. The next deadlines are as follows:

- *Conference Support*: April 15, 2021, for conferences starting after August 15, 2021

- *Volunteer Lecturer*: June 1, 2021, for lectures to be held after October 1, 2021

4.2 Travel support programs

IMU-CDC has three different programs for one-month research visits that are open continuously with several deadlines per year.

- The *Abel Visiting Scholar Program* is funded by the Niels Henrik Abel Board (Norway) and designed for postdoctoral mathematicians in the early stages of their professional careers: the applicant should be under 35 years of age; the maximum age may be increased by up to three years in the case of an individual with a broken career pattern. Next deadline: April 30, 2021, for visits between September 1 and December 31, 2021.

- The *IMU-Simons African Fellowship Program* is funded by the Simons Foundation (USA) and designed for mathematicians from African countries employed in Africa. Next deadline: April 15, 2021, for research visits starting between August 1, 2021, and August 1, 2022.

- The *Individual Travel Fellowship Program* supports travel expenses. Host institutions are generally responsible for living expenses, but due to the economic crisis, during 2021 and 2022, requests for partial living expenses may also be considered for evaluation. Next deadline: April 15, 2021, for research visits starting between August 1, 2021, and August 1, 2022.

Check details and subsequent deadlines at the IMU Research Travel Grants page.

Olga Gil-Medrano
Secretary for Policy of the CDC

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

5.1. World Meeting for Women in Mathematics (WM)²

The first World Meeting for Women in Mathematics (WM)² was organized by IMU's CWM as a satellite event of ICM 2018 in Rio de Janeiro. It gathered over 300 participants, from over 50 countries. The program included the world premiere of the film "Journeys of Women in Mathematics", invited research talks, a public lecture, group discussions, a poster session, and a tribute to Maryam Mirzakhani. The second (WM)² has been approved as a special satellite event of the ICM 2022 in Saint Petersburg by the Local Organising Committee. It will take place on July 5th, 2022, at the *Expoforum International Convention & Exhibition Centre*—the ICM 2022 venue. The program will include four invited talks by distinguished female mathematicians in and from Russia and nearby countries, a poster session, panel discussions about the gender gap in mathematics, and the exhibition "МАТЕМАТИКА, through a land of mathematics". For more details, check out the (WM)² webpage.

5.2. Congratulations to Alicia Dickenstein and Shafi Goldwasser on receiving the L'Oréal-Unesco International Awards For Women in Science

Every year, the Fondation L'Oréal and UNESCO celebrate the scientific excellence of five eminent women scientists, each from a major region of the world. In 2021, the L'Oreal-UNESCO For Women in Science International Awards honor laureates in the field of Physical Sciences, Mathematics and Computer Science. Alicia Dickenstein, Mathematics, Argentina, and Shafi Goldwasser, Computer Science, USA, receive two of

these awards. The other awardees are Françoise Combes, Astrophysics, France, Catherine Ngila, Chemistry, South Africa, and Kyoko Nozaki, Chemistry, Japan. Read more on [CWM News](#).

[Marie-Françoise Roy](#) and [Carolina Araujo](#)
Chair and Vice-chair of the IMU [Committee for Women in Mathematics](#)

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6. [ABEL PRIZE 2021](#)

The [2021 Abel Prize](#) has been awarded to [László Lovász](#) and [Avi Wigderson](#), "*for their foundational contributions to theoretical computer science and discrete mathematics, and their leading role in shaping them into central fields of modern mathematics*."

[László Lovász](#) is a member of the [Alfréd Rényi Institute of Mathematics](#) (ELKH, MTA Institute of Excellence) and of the [Eötvös Loránd University](#) in Budapest, Hungary. He was the [President of the IMU](#) from 2007 to 2010. Lovász has won many awards including the 1999 Wolf Prize, the 1999 Knuth Prize, the 2001 Gödel Prize and the 2010 Kyoto Prize.

[Avi Wigderson](#) is a member of the [Institute for Advanced Study](#), Princeton, USA. In 1994, Wigderson won the [Rolf Nevanlinna Prize](#) of the IMU. Among his many other prizes are the 2009 Gödel Prize and the 2019 Knuth Prize.

The reader is invite to visit the excellent [Abel Prize webpage](#) for a wealth of information.

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7. CALL FOR NOMINATIONS FOR THE [ICIAM PRIZES 2023](#)

The ICIAM Prize Committee for 2023 calls for nominations for the six [ICIAM Prizes to be awarded in 2023](#) (the Collatz Prize, the Lagrange Prize, the Maxwell Prize, the Pioneer Prize, the Su Buchin Prize, and the Industry Prize). Each ICIAM Prize has its own special character, but each one is truly international in character.

Nominations are therefore welcomed from every part of the world. A nomination should take into account the specifications for a particular prize (see the [ICIAM prizes webpage](#) and see also below), and should contain the following information:

- Full name and address of person nominated
- Web homepage if any
- Name of particular ICIAM Prize
- Justification for nomination (cite nominator's reason for considering the candidate to be deserving, including explanations of the scientific and practical influence of the candidate's work and publications)
- Proposed citation (concise statement about the outstanding contribution in fewer than 250 words)
- CV of the nominee

- 2-3 letters of support from experts in the field and/or 2-3 names of experts to be consulted by the Prize Committee
- Name and contact details of the proposer

Nominations should be made electronically through the [nomination website](). The deadline for nominations is September 1, 2021. Please contact [president@iciam.org]() if you have any question regarding the nomination procedure.

ICIAM Prize Committee for 2023

- *Committee Chair*: Ya-xiang Yuan
- Barbara Wohlmuth (Chair of Collatz Prize Subcommittee)
- Leah Edelstein-Keshet (Chair of Lagrange Prize Subcommittee)
- Gang Bao (Chair of Maxwell Prize Subcommittee)
- Alfredo Bermúdez (Chair of Pioneer Prize Subcommittee)
- Lois Curfman McInnes (Chair of Su Buchin Prize Subcommittee)
- Nira Chamberlain (Chair of Industry Prize Subcommittee)

[ICIAM, the International Council for Industrial and Applied Mathematics](), is the world organization for applied and industrial mathematics. Its members are mathematical societies based in more than 30 countries. For more information, visit the [Council's webpage]().

[Ya-xiang Yuan]()
[ICIAM President]()

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8. INTERNATIONAL YEAR OF BASIC SCIENCES FOR SUSTAINABLE DEVELOPMENT 2022: WE NEED IT MORE THAN EVER

For almost a year and a half now, the world has been disrupted by the COVID-19 pandemic caused by the SARS-CoV-2 virus. But how much worse could the situation have been without the progress and results produced for decades, even centuries, by curiosity-driven scientific research?

We deplore the many deaths due to COVID-19, and the future is still very uncertain, especially with the detection of new variants, some of which are spreading more quickly. But, in the first place, how could we have known that the infection was caused by a virus, what this virus looks like and what its genetic sequence and variations are without basic research? Viruses were discovered at the beginning of the 20th century, thanks to the work of Frederick Twort, Félix d'Hérelle and many others. The first electron microscope was built in the 1930s by Ernst Ruska and Max Knoll; and DNA sequencing began in the mid-1970s, notably with research by the groups of Frederick Sanger and Walter Gilbert.

We could continue such a list, with basic research at the root of tests, treatments, vaccines, epidemiological modelling, etc. We even owe high-speed, long-distance communications, which allow us to coordinate the fight against the pandemic and reduce interruptions in education, economic activities and even the practice

of science, to the discovery and study of electromagnetic waves and optic fibers during the 19th century, and to the development of algorithms and computer software during the 20th century. The COVID-19 pandemic is a reminder (so harsh and brutal that we would have preferred to have been spared) of how much we rely on the continuous development of basic sciences for a balanced, sustainable and inclusive development of the planet.

On many other issues, basic sciences have an important contribution to make to progress towards a sustainable world for all, as outlined in the Agenda 2030 and its 17 Sustainable Development Goals, adopted in September 2015 by the United Nations General Assembly. They provide the essential means to address major challenges such as universal access to food, energy and sanitation. They enable us to understand the impacts on the climate, and on life on Earth and in aquatic environments of the nearly 8 billion people currently living on the planet, and to act to limit and reduce these impacts.

Indeed, unlike our use of natural resources, the development of the basic sciences is sustainable par excellence. From generation to generation, it builds up a reservoir of knowledge that subsequent generations can use to apply to the problems they will face, which we may not even know about today.

The International Year of Basic Sciences for Sustainable Development (IYBSSD) will focus on these links between basic sciences and the Sustainable Development Goals. It is proposed to be organized in 2022 by a consortium of international scientific unions and scientific organizations led by IUPAP (IUCr, IMA, IMU[1], IUBS, IUGG, IUPAC, IUHPST, IUMRS, IUVSTA, CERN, IRD, IIASA, EPS, JINR, NuPECC, ICTP, ISC, Rencontres du Vietnam, SCOR, SKAO, SESAME), with the recommendation of a resolution voted by the UNESCO General Conference during its 40th session in 2019. Over 50 national and international science academies and learned societies and around 30 Nobel Prize laureates and Fields Medalists also support this initiative. The Dominican Republic agreed to propose a resolution for the promulgation of the International Year during the 76th session of the United Nations General Assembly, beginning in September 2021.

We very much hope that scientists, and all people interested in basic science, will mobilize around the planet and take this opportunity to convince all stakeholders (the general public, teachers, company managers, policymakers, etc.) that through a basic understanding of nature, inclusive (especially by empowering more women) and collaborative well-informed actions will be more effective for the global common interest. We especially invite all mathematicians and their organizations to create or join national IYBSSD 2022 committees to organize events and activities during this international year.

More information, as well as communication material, can be found at the IYBSSD 2022 homepage. This will also be shared through social media accounts (look for **@iybssd2022** on Facebook, Twitter, LinkedIn and Instagram). You are also invited to subscribe to the IYBSSD 2022 Newsletter on our webpage.

Michel Spiro
President of the International Union of Pure and Applied Physics (IUPAP)
President of the Steering Committee for the proclamation of IYBSSD 2022

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1   IMU is a founding union of the IYBSSD 2022

9. ICM 2022 CHEBYSHEV GRANTS

The Chebyshev Grants Program of ICM 2022 provides full support, including airfare and local expenses in Saint Petersburg, to 1000 participants from developing countries as defined by the IMU.

The organizers have extended the deadline for applications for the Chebyshev Grants. Priority will be given to applications received by 31 May 2021.

Visit the ICM 2022 grants webpage for the latest information.

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10. zbMATH OPEN: ZENTRALBLATT FÜR MATHEMATIK OPEN TO ALL

Readers of IMU News certainly know *Zentralblatt für Mathematik*, or zbMATH on the Web, the longest-running abstracting and reviewing service in pure and applied mathematics.

Something some readers may not know is that, since 1 January 2021, zbMATH, now aptly renamed zbMATH Open, is an open access platform.

For details on this noteworthy development, check out this webpage.

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