IMU-Net 102: July/August 2020
A Bimonthly Email Newsletter from the International Mathematical Union
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1. EDITORIAL: INSTITUTES AND FUNDING IN THE AGE OF PANDEMIC

The Clay Mathematics Institute (CMI) is a Private Operating Foundation dedicated to increasing and disseminating mathematical knowledge. It exists to "further the beauty, power and universality of mathematical thought". In normal times, CMI supports the work of leading researchers by awarding Fellowships and prizes, and by organizing or enhancing conferences, workshops and summer schools. These are not normal times, so what should such facilitators of mathematics do now?

Institutes built to house researchers cannot remain empty for long if their cost is to be justified and sustained, while funders of research fellowships will find the demand for the precious time that they buy greater than ever. CMI will be increasing the amount of funding it dedicates to Research Fellowships, reflecting the extraordinary quality of applicants that we have seen in recent years, as well as a desire to help alleviate the bottleneck that will undoubtedly develop as universities across the world freeze hiring. The Simons Foundation has responded to this bottleneck with an admirable program of Bridging Fellowships. National agencies also have to act, to save a generation from falling into the gap.

Beyond fellowships and prizes, most of CMI's budget is spent on the travel and accommodation associated to physical meetings. Face-to-face conversation and the total immersion of a conference are stimuli that have sustained most of us throughout our careers. We are now forced to consider alternatives. And we face the disquieting possibility that we may have to reassess the hitherto-commanding argument that physical meetings justify the environmental damage that they cause and the resources that they consume. Might these resources be better directed elsewhere in the service of mathematics?

There is a danger of exclusion in this. If we are not to meet as often in person, we must devise mechanisms that allow people from different regions, cultures and generations to interact as freely as they do when drinking coffee at a meeting. Break-out rooms in zoom are not going to do it, particularly in terms of crossing generational boundaries.

If we rely more heavily on new means of conveying recent mathematical ideas, we might also contemplate new means of sifting these new media, distinguishing the formal from the informal while respecting both, and lauding the exceptional ones to distinguish them from a sea of noise. One can imagine a structure of archives with different foci and requirements, analogous to the landscape of journals. (Selection and custodianship would be thorny issues.) Who would fund this?

Physical institutes have played a pivotal role in global mathematics over recent decades -- they are precious, fertile places. What now for them? Oberwolfach is honing a style of hybrid meeting, with reduced numbers on site, maintaining the luxury of a specialist audience. MSRI has also responded creatively to the crisis, honouring their commitments to postdocs, nurturing online research groups, and providing hardware and software to participants to ensure that digital exclusion does not confound their attempts to extend inclusivity. The increased need for suitable kit is something that all funders have responded to, including CMI, but it is remarkable how slight many of these needs are.

Our seminars in Oxford this term featured speakers from across the globe – no travel, no jet-lag. Airlines and hotels will go bust, while seminar budgets can be put to other uses. In Oxford this is intriguing, but the real potential lies elsewhere: might we radically increase the number of people in the world with access to mathematical conversation at the highest level? By this I mean the experience of a regular seminar, with the ability to interact with distinguished speakers. The ability of organisations such as CMI or IMU to convene and lend prestige to such a program could play a key role, while the amounts of money required -- ensuring connectivity and paying honoraria – are likely to be modest.

Grand colloquia also have an important role to play in mathematics. Events such as the Clay Research Conference or ICM can provide inspiring visions of the frontiers of mathematics. The rigour and care with which the topics and speakers for such events are selected is crucial; in the case of the [Clay Research Conferences](#) (CRC), this is the responsibility of CMI's Scientific Advisory Board. If the pandemic curtails such large-scale gatherings beyond 2021, it will be incumbent on us to find a new mechanism that does justice to this heritage. This is not easy: the ocean of lectures online is a feast that can easily lead to gluttony and fatigue; how does one craft an event that stands above this? The excellence of the mathematical content is the most important feature, but we also have to come to terms with the importance of production, archiving and distribution.

We are currently wrestling with similar issues in the context of the [CMI-HIMR summer school](#), which Alexei Borodin and Ivan Corwin have moved online inventively, and the PROMYS program for gifted high-school students (extended to embrace Europe), which is thriving online despite losing its characteristic physical intensity.

New thinking is required from us all as we strive to promote and enhance the beauty, power and universality of mathematical thought in a changed world.

Martin R. Bridson FRS (*President, Clay Mathematics Institute*)

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2. ICM 2022: NOMINATION OF SPEAKERS AND OF LAUREATES OF IMU PRIZES

The Adhering Organizations of IMU and the mathematical societies worldwide are invited to nominate plenary and sectional speakers for the International Congress of Mathematicians 2022 in St Petersburg, Russia, 6–14 July 2022. The list of the ICM 2022 sections, as proposed by the ICM Structure Committee and decided by the Executive Committee of the IMU can be found here. When you make nominations for speakers please specify whether you suggest them as plenary speakers or sectional speakers. In case of proposals of sectional speakers, please indicate to which sections you would like the persons to be invited. Shared lectures between sections are also possible.

All communication concerning the scientific program of ICM 2022 is handled by the Chair of the Program Committee, Martin Hairer. Please direct all your proposals for invited plenary and sectional speakers to Martin Hairer using the email address chair@pc22.mathunion.org. Nominations should be received by the PC Chair no later than **1 November 2020**.

The Adhering Organizations of IMU are also invited to submit nominations for the IMU distinctions listed below, thus assisting the corresponding committees in their task of selecting the awardees who will receive their distinctions at the ICM 2022. Nominations are solicited for

- the Fields Medals – Chair: IMU President Carlos E. Kenig. Email: chair@fields22.mathunion.org
- the IMU Abacus Medal – Chair: James Demmel. Email: chair@abacus22.mathunion.org
- the Carl Friedrich Gauss Prize – Chair: Eva Tardos. Email: chair@gauss22.mathunion.org
- the Chern Medal Award – Chair: Yakov Eliashberg. Email: chair@chern22.mathunion.org
- the Leelavati Prize – Chair: Pavel Etingof.Email: chair@leelavati22.mathunion.org
- the ICM Emmy Noether Lecture – Chair: Sylvia Serfaty. Email: chair@noether22.mathunion.org

Information about each of these awards and the Noether lecture, as well as lists of past laureates, can be found on the IMU website at https://www.mathunion.org/imu-awards/imu-awards-prizes-and-special-lecture .To allow the committees sufficient time for their decision process, the IMU has set **31 December 2020** as the deadline for nominations.

The local organizers have issued the first ICM Newsletter, which can be retrieved from https://yastatic.net/s3/contest/icm2022/icm%20newsletter.pdf . You may sign up directly for future newsletters via https://icm2022.org (scroll to the bottom of the page for the sign-up field).

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3. CEIC: NOTES AND COMMENTS

The push for immediate open access to published papers continues to cause controversy, with the ERC (European Research Council) Scientific Council deciding to withdraw its support of cOAlition S, a group of funding agencies working to develop policies to promote open access. The ERC had been a high-profile supporter of Plan S, and while this loss seems unlikely to derail the plan, it illustrates the debates and uncertainty within the research community.

The ERC statement focuses on researchers' needs, particularly for junior researchers, as well as equity between countries and research areas:

https://erc.europa.eu/news/erc-scientific-council-calls-open-access-plans-respect-researchers-needs

See also the cOAlition S response:
https://www.coalition-s.org/coalition-s-response-to-the-erc-scientific-councils-statement-on-open-access-and-plan-s/

Meanwhile, supporters of Plan S are working on strategies intended to ensure that open access mandates will not restrict the ability to publish in non-open-access journals, by reserving the right to distribute preprints through open access repositories:
https://www.coalition-s.org/rights-retention-strategy/

The current strategy for Plan S involves releasing the "author accepted manuscript" under a Creative Commons Attribution (CC BY) license if the authors publish in a non-open-access journal. This license grants substantially more rights than the default license on the arXiv, for example, and it remains to be seen how many publishers will agree to such a license. Currently, in mathematics almost all publishers allow the arXiv license, but not necessarily a CC BY license, so this would represent a change in publishing practices.

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4. **IMU-CDC GRADUATE SCHOLARSHIPS GRAID**

The Selection Committee has completed during the month of July the evaluation of the applications to the GRAID (Graduate Research Assistantships in Developing Countries) program received for the 2020 call. Three research teams from Benin, Nepal and Ivory Coast have been awarded a GRAID grant to support one PhD student each. A team from Cameroon has received a grant to support one PhD student and two MS students.

The GRAID program is funded thanks to kind donations from mathematicians or mathematical institutions worldwide. IMU-CDC very much appreciates all the donations that are welcome, via the Friends of IMU website http://friends-imu.org/donate/#graid .

The 2021 call of GRAID program will be announced in due time.

More information: https://www.mathunion.org/cdc/scholarships/graduate-scholarships

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5. **NEWS FROM CWM**

a. **Standing Committee for Gender Equality in Science and Gender Gap in Science Project**

A major offspring of the Gender Gap in Science Project is the creation of a Standing Committee for Gender Equality in Science (SCGES), a permanent organization founded by nine unions and partners that will start working in September 2020. IMU is one of the founding members, and will be represented by Marie-Françoise Roy (CWM chair) and Carolina Araujo (CWM vice-chair). SCGES goals include following up the recommendations of the Gender Gap in Science project as well as to maintain and develop further the tools created during the three years of the project.

Moreover, the Gender Gap in Science Book remains freely available on line at https://zenodo.org/record/3882609. The book is also available as print-on-demand and can be ordered through various distributors worldwide, e.g. Book Depository, at https://www.bookdepository.com/Global-Approach-Gender-Gap-Mathematical-Computing-Natural-Sciences/9783000655333 .

Details for the book:

A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences: How to Measure It, How to Reduce It? Editors Guillopé, Colette; Roy, Marie-Françoise; International Mathematical Union; 6 June 2020; English; Paperback; 244 pages; ISBN-10 3000655336; ISBN-13 9783000655333.

More at https://gender-gap-in-science.org/ .

b. CWM events initially planned for 2020

Five of the eight events approved by CWM for funding in 2020, to take place in Chile, Colombia, India, Senegal, and Vietnam, have to be rescheduled to 2021, while the workshop "Topics in applied mathematics", to take place at the Nesin Village in October with women lecturers in mathematics from Morocco and Iraq, is currently scheduled to go ahead. The "May 12th initiative" website, and the first phase of the exhibition project "МАТЕМАТИКА, through a land of mathematics", planned for (WM)² and ICM in Saint Petersburg, will also go ahead with support in 2020.

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6. NEW EXECUTIVE COMMITTEE OF ICMI ELECTED

On 13 July, the International Commission on Mathematical Instruction (ICMI), a commission of the IMU, hosted its quadrennial General Assembly as a web event. The event concentrated primarily on the election of the new ICMI Executive Committee.

The newly elected Executive Committee of ICMI for the term 1 Jan 2021 – 31 Dec 2024 is as follows:

President: Frederick Leung (Hong Kong SAR China)
Secretary General: Jean-Luc Dorier (Switzerland)
Vice Presidents : Merrilyn Goos (Australia/Ireland) and Anjum Halai (Pakistan).

Members-at-large: Marta Civil (USA), Patricio Felmer (Chile), Mercy Kazima (Malawi), Núria Planas (Spain), and Susanne Prediger (Germany).

In addition, Jill Adler (South Africa) will serve as Past President on the new EC.
The IMU President and Secretary General also serve ex officio on the ICMI EC.

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7. EMS COUNCIL ELECTS EXECUTIVE COMMITTEE MEMBERS AND SELECTS SITE OF ECM 2024

The meeting of the Council of the European Mathematical Society (EMS) on 4 July had also to be carried out online. Apart from listening to a short report by EMS president Volker Mehrmann, the

delegates representing member societies and institutions and the individual member of the EMS acknowledged the financial report and the budget for the next two years. The remaining agenda concentrated on elections with the following results:

As of 1 January, 2021, Jorge Buescu (Lisbon, Portugal) will be one of the two vice-presidents, and Jiří Rákosník (Czech Academy of Sciences, Prague, Czech Republic) will act as secretary of the society. Beatrice Pelloni (Edinburgh, UK) was re-elected as member-at-large of the EMS Executive Committee. Newly elected members of that Committee are: Frédéric Hélein (Paris, France), Barbara Kaltenbacher (Klagenfurt, Austria), Luis Narváez (Seville, Spain) and Susanna Terracini (Torino, Italy).

The [8th European Congress of Mathematicians](#) had to be postponed because of the pandemic. It will take place in Portorož (Slovenia) in the week 20-26 June, 2021. For the [9th European Congress](#), Council had to select between two excellent bids. It decided that this congress will be held in Seville (Spain) in the week 15-19 July, 2024.

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8. PRINCESS OF ASTURIAS AWARD FOR TECHNICAL & SCIENTIFIC RESEARCH 2020 AWARDED TO MEYER, DAUBECHIES, TAO AND CANDÈS

First awarded in 1981, the [Princess of Asturias Award for Technical and Scientific Research](#) is aimed at recognizing the work of fostering and advancing research in the field of mathematics, astronomy and astrophysics, physics, chemistry, life sciences, medical sciences, earth and space sciences or technological sciences. In 2020, the prize was awarded to Yves Meyer (French), Ingrid Daubechies (Belgian and American), Terence Tao (Australian and American), and Emmanuel Candès (French).

From the citation: The laureates have made immeasurable, ground-breaking contributions to mathematical theories and techniques for data processing, which have extraordinarily expanded our sensorial capabilities of observation and which constitute the foundations and backbone of the modern digital age.

For their part, Yves Meyer and Ingrid Daubechies have led the development of the modern mathematical theory of wavelets, which are like mathematical heartbeats that enable us to approach Van Gogh and discover his style or to listen to the music enclosed in the apparent noise of the Universe, among many other applications of all kinds. In short, they enable us to visualize what we cannot see and listen to what we cannot hear.

On the other hand, in addition to the undeniable advances in medical imaging and other diagnostic tests derived from the collaboration between Terence Tao and Emmanuel Candès, their contributions to the techniques of compressed sensing enable us to complete electromagnetic signals or reconstruct melodies from which time has stolen notes.

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9. SUBSCRIBING TO IMU-NET

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Subject: subscribe

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