

## Editorial To The Sixth Issue

Dear Reader,

It is our great pleasure to welcome you to the sixth issue of the CWM newsletter.

We continue our interview series with another CWM member, Josephine Wairimu. Josephine has been very active to build a network of African women in mathematics. She tells us about her successful career and personal life as well as her service to the mathematics community. We then continue with “News From CWM”. This includes the funding call for 2022, announcement of  $(WM)^2$  and wonderful news from CWM member Motoko Kotani and CWM Ambassador for Argentina, Liliana Forzani. We congratulate Prof. Kotani for being designated as president-elect (2022 - 2024) of International Science Council and Professor Forzani for being elected as the president of Mathematical Union of Latin America and Caribbean (UMALCA) for the period 2021-2024. She will be the first woman president of UMALCA. In this section you can also read about the CWM virtual continental ambassador meetings and 2021 report of the Standing Committee for Gender Equality in Science. There have also been many outstanding women mathematicians who have been awarded important prizes. For the details of these and many more fantastic news see the News section. We wish that it will give you hope in these difficult times.

The last section of the newsletter is a very interesting article regarding the activities of Japanese women in mathematics, written by Makiko Sasada for University of Tokyo. We thank Prof. Sasada for writing such an inspiring article! It will for sure give the readers new ideas about future women in mathematics events.

We invite your feedback and suggestions about the Newsletter. Hope you enjoy reading it! Please distribute it in your country and your scientific network.

Ekin Ozman

## Interview with Josephine Wairimu



We continue our interview series with Josephine Wairimu, member of CWM. Dr. Wairimu is working at School of Mathematics, University of Nairobi, Kenya.

She has also duties as members of several organizations such as Organization of Women in science in developing countries, OWSD and Association of French Alumni in Kenya, Afraken, East African Network of Women in Basic Sciences. Dr. Wairimu is the secretary of African Women in Mathematics Association and president of Kenya Women in Mathematical Sciences Association which was founded by herself after 2014 IMU.

Dr. Wairimu works in the broad area of mathematical modeling. Her work has applications in understanding the transmission and control of infectious diseases and finding control measures.

**Q:** Can you give us a very short presentation of your career and current situation.

**JW :** I am a mathematical modeler and senior lecturer of applied mathematics at the School of Mathematics, University of Nairobi. My research interest is the study of disease transmission and control dynamics in an African Setting. Key to my current interest is, the effect of human and vector behavior in transmission and control of infectious disease, together with control measures for implementation problems concerned with diseases of poverty.

**Q:** Could you tell us how you got into math? What made you a mathematician? When did you decide to become a mathematician?

**JW:** Since my early school days, mathematics has been my best subject, and I was one of the top students all through, with my love for the area making me a good friend to all my mathematics teachers. I decided to be a mathematician in my high school, where I choose mathematics as my major subject, and also in my undergraduate, where I chose mathematics and education as my major fields for my bachelors. I think my being a mathematician is more inborn than made. Although the teachers' and my parents' encouragement kept me in the subject when life became unbearable, I really cannot recall struggling to do mathematics. It has been my pleasure all through to tackle any problem till I get the correct answer.

**Q:** Did you have any role models? male or female?

**JW:** My dad has been my greatest pillar in mathematics. Although he is now 91 years old, he can still add and subtract correctly. In my early days, he used to send us to the shop and calculate the change we brought on his hand with a match stick. I could see how easy it was for him, and I did the same to compare with his answer. I felt as good

as him, and this encouraged me to do the same in my elementary school. My



Prof. Wairimu Collaborative Research and Postgraduate Mentorship Program in Mathematical Epidemiology

mathematics teachers (who were all male) were my role models up until I started my PhD. Then, in my travels for workshops, seminars and women in science activities around the world, I met senior women in mathematics. They become very instrumental in my growth as a lecturer, mathematician and also as a researcher.

**Q:** Can you tell us about your research? What attracted you to this area of mathematics?

**JW:** I got my interest in mathematical modeling of infectious diseases from my

supervisor, Prof. Wandera Ogana. He was very keen in supporting me to attend workshops and seminars in mathematical modeling, an area that was relatively new in Kenya. The real life application of math to solve problems in our society made me feel useful. In particular, malaria and HIV models brought to life the way I could use my analytical skills to intervene in our society. I am still doing this as I pick up useful hints in my day to day life. The presenters of the lectures in the workshop encouraged us to talk to them for further collaboration. Having a mentor as you jump into new waters is the best thing a student can have. I had somebody with good knowledge of the subject who was willing to hold my hand. It made me develop a strong interest in the area.

**Q:** Other than being a CWM member, you have many responsibilities in different organizations too. Can you describe your role in these organizations. How do you balance all these duties?

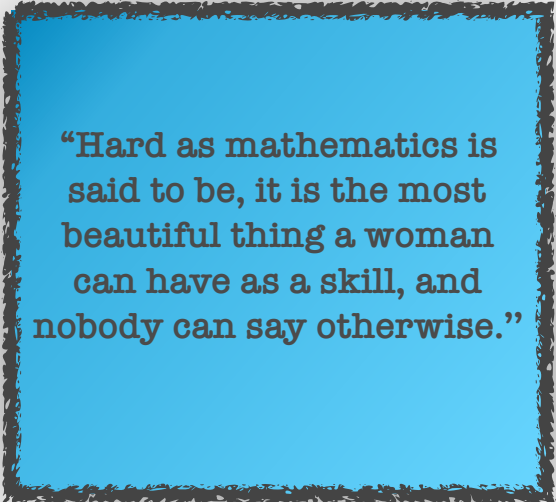
**JW:** I am a member of many organizations, the Organization of Women in Science in Developing Countries, OWSD; African Women in Mathematics Association, AWMA (where I am the secretary); the Kenya Women in Mathematical Sciences Association, KWIMSA (where I am the president); the East African Network of Women in Basic Sciences, EANWoBAS (Eastern Africa and Kenyan nodes); and the Association of French Alumni in Kenya, Afraken. Apart from KWIMSA, I am an active member and

organizer of local and regional activities in these organizations. I founded the Kenya Women in Mathematical Sciences Association in 2014, after I attended the ICM 2014 in Seoul, South Korea. We saw how well organized other countries were, having forums to network, mentor and track members growth in mathematical sciences. This encouraged me to organize women in Kenya, and that's how KWIMSA was born. Balancing all these commitments have always been a challenge. One thing that keeps me strong is to see young women in our networks study and graduate at various levels with our mentorship, supervision and encouragement. Having a strong network of women we can refer to when in need and also encouraging the young girls through our high school outreaches to choose mathematics as their career subject in college. This keeps me going many times, when sacrifice calls.

**Q:** Do you have many collaborators In Kenya ? outside Kenya ? If so, how do you arrange conditions to work with them? Are you able to meet with them regularly? Do you have Ph D students ? male or female ?

**JW:** I have many collaborators in Kenya and outside, both male and female. In Kenya we work together to supervise students in common research areas, and we organize training for postgraduate students. So we work online and physically to achieve our goals. For the international collaborators, we also plan projects together, like supervision, workshops, summer schools, grant applications and publish research articles together. Meetings include exchange visits, where I travel and they also come to Kenya. Some are short visits like two weeks and others are three to four month visits sponsored by joint grants or individual grants. I have been very successful in getting proposals accepted and grants offered.

In 2015, I organized and ran a CIMPA school in Naivasha, Kenya to teach our postgraduate students how to analyze complex epidemiological models. I have received grants to sponsor collaborative visits in the US twice and many grants to attend workshops. This is one thing women have to be good at if they want to grow in their career. Funding is plenty but many women can be hesitant to devote their time and energy to the time consuming task of proposal writing.



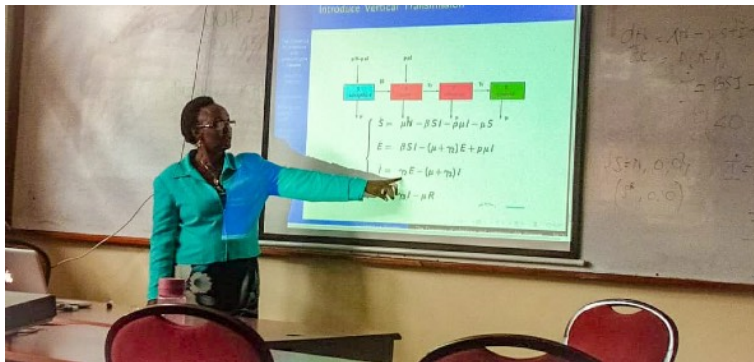
“Hard as mathematics is said to be, it is the most beautiful thing a woman can have as a skill, and nobody can say otherwise.”

**Q:** Have you faced any challenges as a woman in mathematics? If yes, did you have other kinds of support through these challenges? Was it difficult to combine family

life with your mathematical career ?

**JW:** It has been challenging at times to be a mathematician in Kenya, in my community and at times in the family. For one thing, mathematics requires a lot of time alone, which is far from being ideal, especially with young children. After my

bachelors, I got married and had my three children, and so I could not start my masters due to time constraints, a job, and financial strain that required me to do extra jobs to fend for my family. I was only able to do my masters degree after 12 years with a scholarship from my then institution, the Kenya Polytechnic (Currently Technical University of Kenya). I was also sponsored by the Gandhi Smarak Nidhi Fund. After graduation, I got a job as a Tutorial Fellow at the University of Nairobi, and there got a scholarship from the French Embassy in Nairobi to pursue my doctorate in France. It was so hard to leave my children in the care of my father and nanny, as my spouse was out of the picture then. For three or four months, I could go and do my research and I graduated after four miracle years. I have never gone through such a difficult period in my life, having to miss my children, not being able to attend to them when they were sick, and working on a new research area I knew so little about. But I believe that my faith in God helped me to get through, one day at a



time. My family came in handy, my sister would live in my house with the children for weeks, my nieces would come and take the children out and my brothers had my sons well attended to. I can say the challenge was worth taking, as I set a pace for others in my family to go back and further their studies. Luckily for us who are in careers, any training

translates into income very quickly, so when I was confirmed as a lecturer on a permanent and pensionable basis, I forgot the four years of pain quickly, and started enjoying the subject as before.

During my PhD study, my supervisor, Prof. Sallet Gauthier and Prof. Wandera Ogana were very helpful and understood my predicament, so they gave me all the support I needed, and made life bearable for me as a mother and as a student. There were other students of Prof Gauthier in France whose areas of research were related so we could consult and have project presentations on a weekly basis. I also had my workshop grants to enable me to attend and present my work. This broadened my understanding of the subject and I gathered more analytical tools from other professors and students. This made my PhD work easier and enjoyable.

There are also some challenges that I have faced in terms of research collaborations. Sometimes I faced bullying from male researchers as they made comments to demean me or my work. Their comments made me feel not as good as them and they treated me like a lower being than themselves. One time, one of my collaborators refused to share a source file for a joint paper we were publishing, claiming that it was risky to share it as we did not have systems to control losing the work in my care. The other negative part of this was being treated casually because I

come from and work in Africa where certainly the systems break down at times. However it felt as if I personally held responsible for the embarrassing system failures. Sometimes I feel so unfortunate to bear that tag, but am proud of my country, my university of Nairobi and also glad that I have come this far.

Now I am settled as a lecturer, mother, and wife. The most difficult thing now is to find time to do meaningful research. The children are now at a stage where they need me seriously and I have to give them attention. Taking care of the family has

become like another profession that occupies 24 hours a day, and I am left exhausted to say the least. House chores are easier now that the kids are big and we share them. The online teaching makes me look like I am free and in the house to do it, though it is harder than before. What has taken a complete break is serious research. But I thank God that things are starting to improve and soon, work will be rolling again. All in all, I have a very



Data Science training workshop at the University of Nairobi

supportive family. My husband is proud of me and he goes out of his way to make sure I am comfortable for my work, he travels with me wherever I need him to, and takes care of the family business when I cannot. My children also understand that at times I need their help, and they do help without complaining. This makes me relax and do my math. The extended family is very proud of me and refers to me as the doctor in the family, making me feel so good to be a mathematician. Hard as mathematics is said to be, it is the most beautiful thing a woman can have as a skill, and nobody can say otherwise.

**Don't forget to visit our web page**

**regularly for more news and information!**

**<https://www.mathunion.org/cwm>**



## ● CWM Funding Call for 2022

CWM invites proposals for funding of up to €3000 for activities or initiatives taking place in 2022, with deadline **15 December, 2021**. Because of the COVID crisis, **(totally or partially) virtual on-line events are welcome and non -virtual projects should explain their plans in case they have to turn virtual**. Applications should be sent to [applications-for-cwm@mathunion.org](mailto:applications-for-cwm@mathunion.org) aimed at either:

- Establishing or supporting networks for women in mathematics preferably at the continental or regional level,
- Organizing research workshops geared towards establishing research networks for women by fostering research collaborations during the event,
- Other ideas for researching and/or addressing issues encountered by women in mathematics.

Note that:

- There will be only one call for applications regarding activities in 2020,
- Priority will be given to events taken place in developing or emerging countries,
- Funding for individual research projects is not available.

For further details please check the CWM [web page](#).

## ● World Meeting for Women in Mathematics 2022

(WM)<sup>2</sup>, the [World Meeting for Women in Mathematics](#), is organized every four years by IMU's CWM as a satellite event of ICM. The first meeting was in Rio in 2018(see the [proceedings](#)) and the second [World Meeting for Women in Mathematics - \(WM\)<sup>2</sup>](#) - will take place in Saint Petersburg, at the Expoforum convention and exhibition center, on July 5 2022, the day preceding ICM 2022. [The program](#) features four plenary lectures by distinguished female mathematicians from Russia and nearby



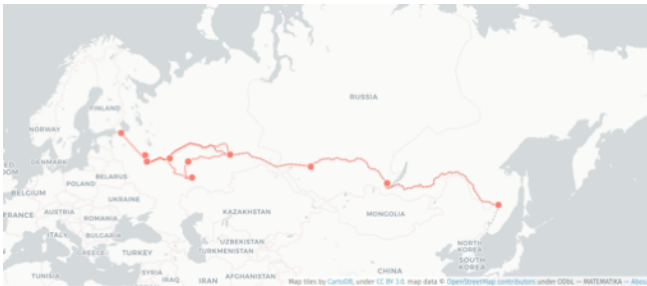
countries: [Mina Aganagi](#), [Eugenia Malinnikova](#), [Natalia Vladimirovna Maslova](#) and [Maryna Sergiivna Viazovska](#).

[Registration](#) for (WM)<sup>2</sup>, is not open yet. However, you can already indicate your interest in attending (WM)<sup>2</sup> when you pre-register for the [ICM](#). Please refer to the [website](#) where the latest information appears.

## ● **МАТЕМАТИКА, through a land of mathematics**

The project [МАТЕМАТИКА](#), through a land of mathematics tells stories of ten Russian women from nine different cities who contribute, directly or indirectly, to the research in mathematics. Each one of them, in her unique way, is engaged into mathematics.

Russia is a very special place for mathematics, and this project is an attempt to sketch an impression of modern Russian mathematics in many of its different aspects.



The choice of the ten heroines reflects the will to learn and share the stories of women, their fights and their dreams, to celebrate them, be impressed and inspired. In order to put this project in place, a Russian mathematician (and interviewer) and a French photographer, Olga and

Bertrand, traveled through Russia from Khabarovsk to Saint Petersburg, in order to meet the heroines of МАТЕМАТИКА. From their discussions and impressions, an exhibition and a book will be created.

The exhibition will be [premiered](#) at the [World Meeting for Women in Mathematics, \(WM\)<sup>2</sup>](#) on the 5th July 2022. This meeting is a satellite event of the International Congress of Mathematicians (ICM2022) that will take place in Saint Petersburg.

## ● **Motoko Kotani elected as president of ISC**



CWM 2019-2022 member and ambassador Motoko Kotani was designated as International Science Council (ISC) president-elect (2022 – 2024) during ISC general assembly on October 14. She will become ISC president from 2025 to 2027. It is wonderful news for ISC, for IMU and more particularly for CWM, for women in science in Japan, and for the reduction of



the gender gap in science worldwide. More details can be found [here](#).

Professor Motoko kindly sent to the CWM ambassadors the following letter: “Thank you very much for your warm messages with encouragement. The ISC is a global voice for science. One of ISC’ challenge is to establish platform to listen to all voices, that of underrepresented in particular. I am happy to engage in its actions.” Professor Kotani was interviewed in the previous issue of CWM newsletter. If you would like to know more about her, see [here](#).

## • **Liliana Forzani first woman President of UMALCA**

CWM Ambassador for Argentina Liliana Forzani was elected as UMALCA (the Mathematical Union of Latin America and Caribbean) President for the period 2021-2024.

Professor Forzani graduated with her first degree in Applied Mathematics in 1988 from the Universidad Nacional del Litoral, and completed a PhD in Mathematics in 1993 at the Universidad Nacional de San Luis, in Argentina. Then in 2007 she finished a second PhD, in Statistics, at the University of Minnesota.



Liliana Forzani now works in both Statistics and Mathematics. She is a Principal Researcher in the National Scientific and Technical Research Council - Argentina (CONICET), and also a Full Professor at the Universidad Nacional del Litoral, Argentina. Liliana received a 2008 L’Oreal-UNESCO-Conicet prize for Women in science, and she was formally mentioned by the parliament of Santa Fe province on the occasion of “International Women’s day” in March 2009, both in the House of Representatives and the Senate.

She has supervised several PhD students, written many articles and book chapters, and held various positions in her university and other organizations. Liliana Forzani actively encourages young people and children in math. She also promotes gender-equity in the math community, and she is not afraid to speak out against unacceptable behaviour when she sees it, including sexual misconduct and discrimination.

## • **CWM virtual continental ambassadors meetings**

CWM is organizing virtual meetings of its 150 ambassadors by continent. The aim is to discuss various aspects of the gender gap in mathematics, and initiatives taken to reduce it, in order to share best practices. The series started with Europe in March and was jointly organized by CWM and EWM (European Women in Mathematics), on March 16 and March 23, 2021. The March 16 event was opened to registered participants.

In Africa, the organizers were CWM and AWMA (African Women in Mathematics Association), the event included a francophone meeting on March 30, 2021 and an anglophone meeting on April 2, 2021, followed by a global one on April 6, 2021.

In Asia and Oceania the meeting took place on June 25 and 26, 2021. A Latin American meeting took place on October 28 and 29, 2021 and a Panamerican one is organized on November 19, 2021.

After the successful continental meetings in Europe, Africa, Asia and Oceania and finally Americas, the CWM general ambassadors meeting will take place from 2 pm to 5 pm CET on on 11 February 2022, the international Day of Girls and Women in Science. Save the date!

## ● **SCGES first annual report**

The 2021 **SCGES** (Standing Committee for Gender Equality in Science) **report**, compiled after the SCGES's first year of existence, is evidence of its current and future work on this endeavor. Starting with a short synthesis by SCGES chair Catherine Jami, it contains short reports by each of the 15 members of SCGES including IMU, all of which have a stated commitment to promote gender equality and women in science. Exchanging information on all related issues and making them visible is a major motivation for the partners who work together in SCGES.

## **OTHER NEWS AND ANNOUNCEMENTS**

### ● **Better proportion of women lecturers at ICM 2022**

The list of the mathematicians who will give the invited lectures during the ICM2022 program is officially **published**. CWM is happy to report that the proportion of women (plenary and sectional) lecturers has reached a little more than 20%. In the previous ICMs (Rio 2018, Seoul 2014, Hyderabad 2010) the proportion had stabilized around 15 %, after a period of growth starting in the 1990s.

### ● **Mathematics without borders**

The IMU celebrated its belated centennial in Strasbourg on 27–28 September 2021, with the conference "**Mathematics without Borders**" with around 200 attendees to the conference. To capture the occasion and for the benefit of those unable to attend, the talks were recorded and can be viewed **here**. Additionally, the IMU engaged the science journalists Marianne Freiberger and Rachel Thomas from Plus magazine to write about the event. In this article the authors mention the important role of CWM: "The Committee for Women in Mathematics works to narrow the gender gap, in particular by helping to establish networks of women mathematicians especially in



photo credit: Catherine Schröder/Université de Strasbourg.

Asia, Latin America and Africa, and the Committee for Developing Countries (CDC) supports mathematics in less advantaged regions.” The full version of this article can be found [here](#).

### • 2022 Maryam Mirzakhani New Frontiers Prize

The Maryam Mirzakhani New Frontiers Prize was established in 2019 by [Breakthrough Prize](#)

[Foundation](#) and named for the famed Iranian mathematician, Fields Medalist and Stanford professor who passed away in 2017. Three Maryam Mirzakhani New Frontiers Prizes were awarded to early-career women mathematicians:

[Sarah Peluse](#), Institute for Advanced Study and Princeton University (PhD Stanford University 2019): For contributions to arithmetic combinatorics and analytic number theory, particularly with regards to polynomial patterns in dense sets.

[Hong Wang](#), University of California, Los Angeles (PhD MIT 2019): For advances on the restriction conjecture, the local smoothing conjecture, and related problems.

[Yilin Wang](#), MIT (PhD ETH Zürich 2019): For innovative and far-reaching work on the Loewner energy of planar curves. In 2021 for its first year, the Prize was awarded to

[Nina Holden](#) – "For work in random geometry, particularly on Liouville quantum gravity as a scaling limit of random triangulations."

[Urmila Mahadev](#) – "For work that addresses the fundamental question of verifying the output of a quantum computation."

[Lisa Piccirillo](#) – "For resolving the classic problem that the Conway knot is not smoothly slice."

### • Prix Junior Maryam Mirzakhani to Bertille Follain and Blandine Galiay

This prize is awarded by Foundation Jacques Hadamard (France) and rewards two very junior female students (last year of bachelor's degree or first year of master's degree) for a first research work or bibliographic study in mathematics. A

prize is awarded for work in fundamental mathematics and another for work in mathematics at interfaces.

The first prize was awarded in September 2021 by a jury chaired by Amandine Veber. There were 23 candidates. The awardees are Bertille Follain for her work on High dimensional change point estimation with missing data via sparse projection and Blandine Galiay for her work on Lattices of the oscillator group of signature  $(2,2)$ . See the video [here](#) (in french).

- [Yaiza Canzani receives the 2022 AWM-Sadosky Research Prize](#)

The Association for Women in Mathematics is pleased to announce that the recipient of the 2022 AWM-Sadosky Research Prize in Analysis will be Yaiza Canzani, Associate Professor of Mathematics at University of North Carolina at Chapel Hill. Canzani is honored for outstanding contributions in spectral geometry and microlocal analysis. The award will be presented at the Joint Prize Session of the JMM in Seattle from 4:25 - 5:25 p.m. Wednesday, January 5. A full press release is attached. Established in 2012, the AWM Sadosky Research Prize recognizes exceptional research in analysis by a woman early in her career. The award is named for Cora Sadosky, a former president of AWM, and is made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, and friends Judy and Paul S. Green and Concepción Ballester.

- [Congratulations to Anna Kiensenhofer for her gold medal in the Tokyo Olympics](#)

CWM congratulates Austrian mathematician [Anna Kiesenhofer](#) for her stunning performance in the women's road race, road cycling, winning [a gold medal in the Tokyo Olympics](#). Anna Kiesenhofer is a postdoctoral researcher at the École Polytechnique Fédérale de Lausanne (EPFL).

- [Emma Castelnuovo Award 2020](#)

The 2020 [Emma Castelnuovo Award](#) was given during the ICME 14 in Shanghai to NCTM – the National Council of Teachers of Mathematics (USA and Canada). The congress was delayed, and then took place as a Hybrid Conference from July 11 to 18, 2021. The [Award Lecture](#) was held by Trena L. Wilkerson.

Emma Castelnuovo was an Italian mathematician who dedicated her work, research and books on teaching mathematics. She died in 2014. In honor of her contributions and impact, the [International Commission on Mathematical Instruction \(ICMI\)](#) decided to name the Award for Excellence in the Practice of Mathematics Education in her name on the occasion of her 100th birthday in 2013. The first Emma Castelnuovo Award was given in 2016.

- [Tatiana Toro Named Next MSRI Director, 2022-2027](#)

The Board of Trustees of the Mathematical Sciences Research Institute (MSRI) announced on June 15, 2021 the appointment of Tatiana Toro (University of Washington) to the position of Director of MSRI. Toro is the Craig McKibben & Sarah Merner Professor of Mathematics in the Department of Mathematics at the University of Washington in Seattle. MSRI is one of the world's leading centers for collaborative research in mathematics, overlooking the campus of the University of California, Berkeley and the San Francisco Bay. Read more about the announcement [here](#).

- [European Women in Mathematics General Meeting 2022](#)

The EWM announces its General Meeting 2022, to be held at the Aalto University, Finland on August 22-26, 2022. EMS/EWM speaker will be Claire Voisin (CNRS). Find more information on Plenary and Gender speakers [here](#). The call for minisymposia will be posted officially in a few weeks but here are some important deadlines:  
February 28, 2022 - Submission of Minisymposium Proposals  
March 31, 2022 - Application for Travel/Accommodation Grants  
May 31, 2022 - Submission of Abstracts

- [Workshop on "The power of women in deep learning"](#)

As part of the Mathematics of Deep Learning program at the Isaac Newton Institute in Cambridge it is organized a workshop on "The power of women in deep learning", 22-23 November 2021. Both in-person and online participation is possible. Speakers include Andrea Bertozzi, Ingrid Daubechies, Stefanie Jegelka, Gitta Kutyniok, Caroline Uhler, Rachel Ward and Marinka Zitnik.

- [Promoting women in mathematics](#)

A [panel discussion](#) has been organized on October 4 at Institut des Hautes Études Scientifiques (IHES), France. The panel was on the topics of diversity and inclusion that will help identify relevant initiatives to attract women to research in the mathematical sciences, and more particularly at IHES.

Panelists were: Eva Bayer-Fluckiger, Professor Emeritus at École Polytechnique Fédérale de Lausanne,

Kathryn Leonard, president of the Association of Women in Mathematics, and Andrea Walther, convenor of the European Women in Mathematics.

Michael R. Douglas, President and Chairman of Friends of IHES, concluded this discussion.

- **Film Screening “Secrets of the Surface – The Mathematical Vision of Maryam Mirzakhani” for undergraduate students of the University of Tokyo**

On August 6th 2021 19:00-21:00, there was an online Film Screening Event of “Secret of the Surface”, with [Japanese subtitles](#) at the University of Tokyo, organized by Go Global Gateway and Kavli IPMU. The audience were undergraduate students in several departments. Yukari Ito (Kavli IPMU) introduced the film and gave a lecture on the mathematics and her experience abroad too. It was a good occasion for the students to know about mathematicians, more specifically women in mathematics, and studying abroad. You can read more about this event and recent developments about Japanese women in mathematics in the article on page fifteen of our newsletter.

- **OWSD Annual report 2020**



The [OWSD](#) (Organization for Women in Science for the Developing World) Annual Report 2020 is now available [here](#). From the summary of the report announcement: "Despite the pandemic, OWSD managed many accomplishments in 2020. We awarded 26 new PhD fellowships, including to candidates in Afghanistan and Nicaragua for the first time in OWSD's history, and saw 23 fellows join the ranks of PhD graduates. Twenty-three Early Career fellowships were also awarded, including to 10 women scientists from least developed

countries. From March to April, we conducted an update to our membership database to remove inactive members; while this initially dropped the number of OWSD members on record from 8680 to 4830, the difference is already being quickly made up by a record number of new membership applications (1850), with a proliferation of new members in Latin America, as well as in other countries thanks to the efforts of new National Chapters in Brazil, Guatemala, Honduras, Malawi, Mozambique, Nepal, Palestine, and Senegal. By the end of 2020, we had already reached 6230 active members. And in February, we were lucky to be able to recognize the five winners of the 2020 OWSD-Elsevier Foundation Awards in person at the annual meeting of the American Association for the Advancement of Science, in Seattle, Washington, before global travel was halted."

# Initiatives for women in math in Japan

Article written by Makiko Sasada

Photos by Hiroaki Kono

Throughout my undergraduate, master's and doctoral studies at the University of Tokyo, where I am now a member of faculty, I was the only female math student in my grade. So it was that, from the very beginning of my career, I could not but help notice there was an absence of women in math in Japan. This was very sad for me and so, even from early on, I started to think about how I could encourage other women to join me. As I became more senior, I began to see the issues were deeper than I first understood, and, as I will explain in the following paragraphs, I have now become involved in various initiatives that I hope will contribute to change.

Although at present there is still a major underrepresentation of women in math in Japan, awareness of the issue of gender equality has been increasing significantly within the community over the past year or two, and more individuals and institutions have started to take action. I am grateful for this opportunity to write an article in the CWM newsletter to introduce some of my activities, along with the wider situation.

## **Suri-Joshi (Girls in mathematics): Bringing the joy of mathematics to girls!**

In 2013, together with Prof. Kenichi Bannai of Keio University, I founded a website called “Suri-Joshi (Girls in Mathematics)”, see [www.suri-joshi.jp](http://www.suri-joshi.jp), [www.suri-joshi.jp/walk/english/](http://www.suri-joshi.jp/walk/english/). Mainly targeting female junior and senior high school students, this introduces fun and interesting aspects of mathematics in an accessible way, as well as stories from the lives of women in math. Having spent my entire undergraduate and graduate school years as the only female student in my class, my motivation for the project was very simple: I wanted more women to know the wonderful joy of mathematics and to share that joy with me. My impression is that the website has been well received, and I have heard anecdotally how several young academics started to read it before they came to university, but unfortunately, there has been no visible change in the overall number of female students in our department so far.

Together with the website, since 2016, Suri-Joshi has been conducting an annual/ biannual one-day workshop for elementary



and junior high school girls and their mothers. The specific subject matter of the workshop differs each time, but the common theme is **"discovering and creating something by yourself"**, with the subtitle **"You are a mathematician too"**. We want participants to experience that mathematics is not an activity in which one simply "looks for the right answer", but a free and creative pursuit to "find a new perspective" and "create your own expression". Another thing we insist upon is that mothers and daughters always participate together, and that mothers and daughters experience exactly the same workshop in different rooms. I feel extremely rewarded when mothers who reluctantly participate in the workshop for their math-loving daughters sometimes

comment "If I had known that math was so much fun, I might have majored in science!" Parents and children often approach the same subject in completely different ways, and I ask them to enjoy the experience again by looking back on it together at home.

In the course of asking others to write articles for the Suri-Joshi website or to join as teaching assistants at workshops, we have created a



network of many female mathematicians and female students in different areas of mathematics. We have also formed a network with men who want to encourage girls to study math, support women in mathematics and share the fun with them. Although I did not start this project for that purpose, it has resulted in many wonderful interactions for me. While I am very happy about that, I have also learned how many women of all generations face isolation, harassment, microaggression and work-life balance challenges, and, in doing so, I realized that I have faced many of the same problems myself. I also came to feel that, although I can introduce the fun of mathematics to female students, I cannot honestly recommend a career as a mathematician to them unless there is a welcoming environment waiting for them when they go on to university and graduate school.

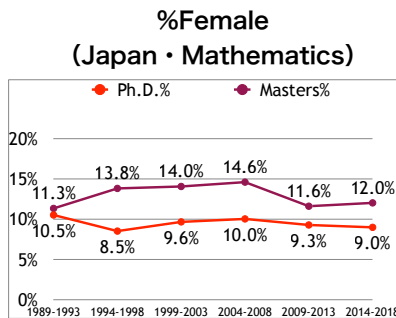
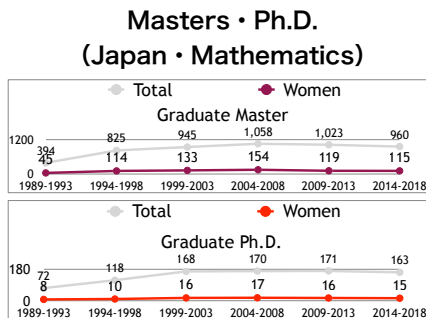
### **The current status: Stark statistics leave room for progress**

In order to better understand the situation, in 2019, again together with Prof. Kenichi Bannai, I wrote a report on gender equality in mathematics in Japan, an English version of which appears [here](#). There were no comprehensive statistics on gender



equality in mathematics in Japan until then. This was received with some surprise at how bad things really were, and we ourselves were shocked by the severity of the statistics. It showed, for example, that the percentage of female doctoral students in mathematics has been stagnant at around 9% for more than 30 years, and has even been on a slight downward trend for the past 15 years, arriving at 6% in 2018 (which

is when the survey was conducted). In addition, since 2004, the percentage of female doctoral students at the 10 leading national universities has halved from 7.5% to 3.5%. The percentage of female professors in these 10 universities was also very low (1.6% in both 2004 and 2019), as was the percentage

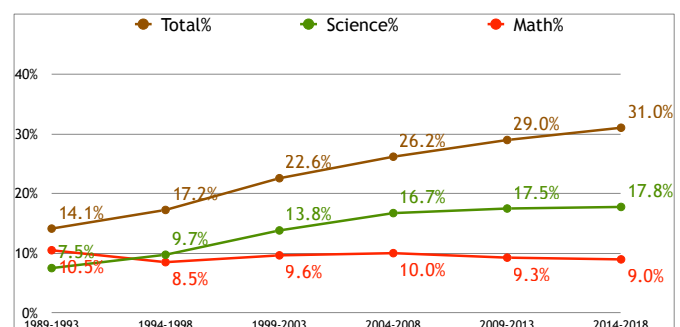


of female associate professors (rising from 2.2%, but only to 6.0%), and the percentage of female lecturers and female assistant professors (again rising only slightly, from 5.0% to 6.6%).

To put these statistics into context, for the past fifteen years or so, there has been a strong trend towards the increased participation of women in the labor market of Japan by the government, and it seemed that steps were being taken to, at least on the surface, aid women in this direction. Indeed, there had been an extension of parental leave, development of nursery schools on campus, and the introduction of anti-harassment training, and so on. In addition, there have been some openings for women-only positions, despite the controversies that have arisen around these. And, there have been many ongoing efforts to encourage female students to major in the sciences or mathematics. However, the data in our report revealed that gender equality has hardly progressed when it comes to academics working in the field of mathematics, and the data on students in particular indicates that it might well regress in the future.

This situation can be attributed to a complex combination of reasons, including the gender stereotypes that exist within Japanese society as a whole, the nature of the discipline of mathematics, and problems within the community of mathematicians in Japan. Whilst not all of these can be overcome by the efforts of our

**Ph.D. Recipients (Japan, %Female, Comparison with Other Fields)**



mathematics community alone, here I would like to focus on aspects of the story that are within our power to change.


One area where I see a particular problem is that, in responding to pressure from the government over the last 15 years or so, affirmative action and other aggressive measures aimed at rectifying gender imbalance (such as women-only grants) have taken precedence, with discussion on what barriers might exist for women and why gender equality is important for each of us being neglected. This has resulted in an increase in the number of people (both men and women) who have a distorted evaluation of women's ability in mathematics, and in some cases has created friction between men and women. In addition, there have been many contradictions with gender equality initiatives, such as the fact that many of the associated tasks have been assigned only to women, which has deprived principally women of research time. And, whilst on-campus nursery schools and events for female students have become popular, training for researchers on unconscious bias and equality has only been introduced in a very limited way in Japan; there will be many mathematicians who are involved in hiring or prize selection who have never heard of unconscious bias, equality, or inclusion. Related to this, it is common in Japan for organizing committees of research meetings to be comprised solely of men, and sometimes this kind of extreme gender imbalance extends to the invited speakers as well.

Finally, concerning harassment, the situation is exacerbated by the fact that the number of women is extremely low in each graduate school – not only does this make them easy targets, it means that it is often the case that women who are the victims of harassment have no other women close to them to ask for help.

### Efforts towards a brighter future

In my view, it is time for the Japanese mathematics community to step up and examine the way gender equality has been implemented up to now, and to think about how to promote gender diversity in a way that is truly desirable for all. On a more optimistic note, I feel that more and more people are gradually becoming aware of the problem and are starting to think in the same way.

As an example of some recent movement in this direction, in June of this year, the Research Institute for Mathematical Sciences (RIMS), a leading international mathematics research institute based in Kyoto University, created a webpage on diversity for the first time, where data on women's participation in RIMS research



**Expository math talk & Journey to be a mathematician**

Time: October 21, 9am-11 am  
 Talk: An invitation to Newton-Okounkov bodies ... and beyond (9-10 am)  
 Diversity Panel discussion: 10-11 am

Speaker: Megumi Harada  
 Professor, McMaster University

Registration: (Deadline Oct 18, 5pm)

Organizers: Benoit Collins (Kyoto U.), Makiko Sasada (U.of Tokyo), Asuka Taketsu (Tokyo Metropolitan U.), Tetsuji Taniguchi (Hiroshima Institute of Technology), Xiaodan Zhou (OIST)

meetings was disclosed. Of course, if one hopes to understand the situation and where it might be improved, it is an important step to collect and publish data like this. Moreover, my department – the University of Tokyo Graduate School of Mathematical Sciences – published a statement “To Create a Harassment-Free Department”, and RIMS published a code of conduct, as well as a statement describing their motivation for undertaking gender equality initiatives. The publication of such a "philosophy" on gender equality is something that I have never seen before in a Japanese mathematics research organization.

Hoping to give space for further debate, in October of this year, a monthly meeting called the "CatchAll Mathematical Colloquium of Japan", in which I participate as one of the organizers, was initiated, [see](#). Along with lectures on mathematics for non-specialists, this colloquium provides a forum for participants to think about and discuss not only gender issues, but also diversity, equality and inclusion more broadly. Until now in the mathematical community of Japan, there has been no clearly-defined arena in which to discuss such topics, including gender issues, and there has been an atmosphere that makes it difficult to bring up such issues, even in personal conversations. We aim to change this atmosphere, even if only a little, so that everyone can feel free to share their own ideas and exchange opinions.

I believe that women in math and the gender equality issue in Japan are entering a new stage. I hope that positive and constructive discussions and initiatives will be widely promoted to realize a research environment that is comfortable and desirable for all people, regardless of gender. In a survey conducted at a Mathematical Society of Japan (MSJ) event in May this year, 77% of the respondents were in favor of affirmative action. In June 2021, Prof. Senjo Shimizu -who is also a CWM ambassador- became the second female president of MSJ, following Prof. Motoko Kotani(a CWM member), who served as president from June 2015 to May 2017. Still, I do not expect any major changes to follow right away, but I dare to believe that these outcomes are a sign that the efforts being made in Japan are leading to real steps forward for future female students to be able to do math in a more welcoming environment. I know that there is already a great deal of experience, data, and accumulated wisdom in the world, and I hope that you will pay attention to the situation of women in math in Japan and support us on our journey



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