



## **Newsletter 25**

**Edited by Sara Munday (University of York, UK)  
and Jasmin Raissy (University Paul Sabatier – Toulouse III)**

**2014/2**

## In this issue

In this issue, we advertise the upcoming 17<sup>th</sup> EWM general meeting, and have an interesting report from the recent ICWM in Seoul, including news of a new women in maths website that was set up during this meeting. We also feature interviews with Shihoko Ishii, Alicia Dickenstein (the newly-elected vice-president of the IMU), and Betül Tanbay. Country reports from Spain and Turkey are included too, as is a report on activities taking place in France. As usual, a series of miscellanea are pointed out at the end of this issue.

## Upcoming Events

### 17<sup>th</sup> General meeting of the EWM

The 17th General Meeting of the European Women in Mathematics Association will take place from Sunday, August 30 (arrival day), 2015 to Saturday, September 5 (departure day), 2015, at Il Palazzone 52044 Cortona (AR) Italy

Webpage: <http://www.europeanwomeninmaths.org/activities/conference/17th-ewm-general-meeting-cortona-2015>

The General Meetings of EWM are held every two years in different locations, with outstanding international speakers and a short course by the designated EMS lecturer. In addition to giving prominence to female mathematics of excellence in Europe, they are aimed at providing greater visibility to young European Mathematicians giving them an opportunity to emerge at the international level.

**Scientific Program.** The program will include:

- A mini-course with three lectures by the invited 2015 EMS lecturer [Nicole Tomczak-Jaegermann](#) (Geometric Functional Analysis, Alberta, Canada Research Chair);
- six general one hour talks by distinguished invited lecturers selected by the joint EMS/EWM scientific committee, namely:
  - **Sylvie Corteel** (Combinatorics, CNRS Paris7, France)
  - **Kathryn Hess** (Algebraic topology, EPFL Switzerland)
  - **Olga Holtz** (Numerical analysis, EMS prize, Berkely USA)
  - **Alessandra Iozzi** (Geometry, ETH Zurich)
  - **Consuelo Martinez** (Algebra, Univ. Olviedo, Spain)
  - **Barbara Niethammer** (Applied Mathematics and PDE's, Bonn Germany).
- Four thematic special sessions: *Applied Algebraic Topology* (chaired by Lisbeth Fajstrup), *Dynamical Aspects of Number Theory* (chaired by Sara Munday), *Mathematical Physics* (chaired by Alessandra Celletti) and *Nonlinear PDEs* (chaired by Angela Pistoia and Susanna Terracini). The special sessions will also include talks by INDAM postdocs.
- Contributed talks by young researchers, also including talks by INDAM postdocs.
- A poster session.

In addition, the program includes a forum and a discussion on Women and Excellence Schemes.

**A public lecture** for the general public will be delivered by [Dava Sobel](#), writer of popular science books (Longitude, Galileo's Daughter, A More Perfect Heaven).

**Pre-registration** is open and mandatory: click to go to the the form. It will close on february 1st 2015. Arrival day is sunday, august 30. The conference will start monday August 31 at 9 am and end friday September 4 at 1 pm.

**Organizing Committee:** Alessandra Celletti (University of Rome Tor Vergata, Italy), Lisbeth Fajstrup (Aalborg University, Denmark), Colette Guillopé (University de Paris Créteil, France), Angela Pistoia (University of Rome, Italy), Marie-Françoise Roy (University of Rennes, France), and Susanna Terracini (Università di Torino, Italy).

## Country Reports

The present report reflects the situation of women in mathematics in Turkey for the academic year 2012-2013 with a wider perspective starting from the bachelor degree. The following table shows the number and percentage of female students:

From the table, it can be seen that % 56.3 percent of the freshmen students, % 58.76 of the total students who are already enrolled in a mathematics department and % 59.63 of students who complete their BSc degree are female.

Let us now consider graduate studies in Turkey from a gender perspective. In the following two tables we see the number and percentages of female graduate students.

TURKEY: PERCENTAGE OF FEMALE GRADUATE STUDENTS FOR THE 2012 - 2013 ACADEMIC YEAR									
	NEW ADMISSIONS			TOTAL NUMBER OF STUDENTS			NUM OF STUDENTS RECEIVING A GRADUATE DEGREE		
	Total	MSc	PhD	Total	MSc	PhD	Total	MSc	PhD
<b>MATHEMATICS</b>	% 51.02	% 50.48	% 52.59	% 48.13	% 47.99	% 48.44	% 55.49	% 59.09	% 40.62

\*T: Total, F: Female, M: Male

Here we also see there are no big differences between male and female students with respect to graduate studies. Additionally, the number of female students is a little higher than that of male students in the case of new admissions of the academic year 2012 – 2013.

Now, the main problem is the situation of women mathematicians in Turkey. The following tables present the number of and the percentage of women mathematicians with respect to both academic careers and research fields.

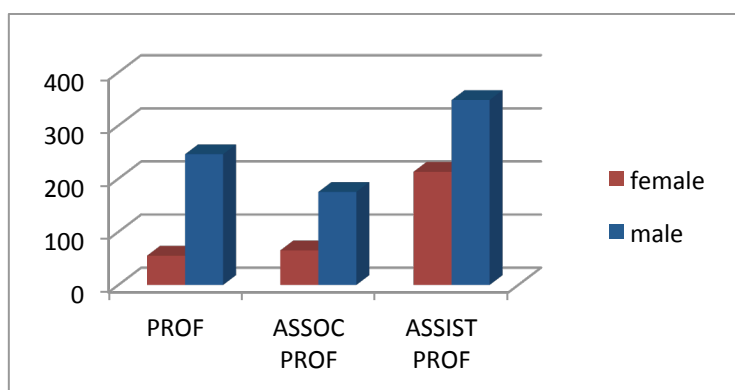
TURKEY: NUMBER OF MATHEMATICIANS BY GENDER FOR THE 2012 - 2013 ACADEMIC YEAR								
	TOTAL*		PROF	ASSOC PROF	ASST PROF	INSTRUCTOR	SPECIALIST	RESEARCH ASSISTANT
<b>MATHEMATICS</b>	<b>T</b>	<b>1683</b>	<b>301</b>	<b>240</b>	<b>561</b>	<b>108</b>	<b>5</b>	<b>468</b>
	F	657	55	65	213	57	4	263
	M	1026	246	175	348	51	1	205
<b>GENERAL MATHEMATICS</b>	<b>T</b>	<b>519</b>	<b>98</b>	<b>59</b>	<b>155</b>	<b>48</b>		<b>159</b>
	F	199	15	17	53	24		90
	M	320	83	42	102	24		69
<b>ALGEBRA &amp; NUMBER THEORY</b>	<b>T</b>	<b>214</b>	<b>34</b>	<b>31</b>	<b>79</b>	<b>13</b>	<b>1</b>	<b>56</b>
	F	90	11	8	37	8		26
	M	124	23	23	42	5	1	30
<b>GEOMETRY</b>	<b>T</b>	<b>178</b>	<b>33</b>	<b>40</b>	<b>57</b>	<b>3</b>		<b>45</b>
	F	70	3	14	24			29
	M	108	30	26	33	3		16
<b>ANALYSIS &amp; THEORY OF FUNCTIONS</b>	<b>T</b>	<b>254</b>	<b>56</b>	<b>33</b>	<b>87</b>	<b>15</b>		<b>63</b>
	F	100	13	6	36	10		35
	M	154	43	27	51	5		28
<b>TOPOLOGY</b>	<b>T</b>	<b>124</b>	<b>18</b>	<b>21</b>	<b>37</b>	<b>3</b>	<b>1</b>	<b>44</b>
	F	46	3	6	9	2	1	25
	M	78	15	15	28	1		19
<b>FOUNDATIONS OF MATHEMATICS &amp; MATHEMATICAL LOGIC</b>	<b>T</b>	<b>54</b>	<b>6</b>	<b>6</b>	<b>17</b>	<b>3</b>		<b>22</b>
	F	21	2	1	4			14
	M	33	4	5	13	3		8
<b>APPLIED MATHEMATICS</b>	<b>T</b>	<b>340</b>	<b>56</b>	<b>50</b>	<b>129</b>	<b>23</b>	<b>3</b>	<b>79</b>
	F	131	8	13	50	13	3	44
	M	209	48	37	79	10		35

\*T: Total, F: Female, M: Male

TURKEY: PERCENTAGE OF WOMEN MATHEMATICIANS FOR THE 2012 - 2013 ACADEMIC YEAR							
	TOTAL	PROF	ASSOC PROF	ASST PROF	INSTRUCTOR	SPECIALIST	RESEARCH ASSISTANT
<b>MATHEMATICS</b>	% 39.04	% 18.27	% 27.08	% 37.97	% 52.78	% 80	% 56.20
<b>GENERAL MATHEMATICS</b>	% 38.34	% 15.30	% 28.81	% 34.19	% 50	----	% 56.60
<b>ALGEBRA &amp; NUMBER THEORY</b>	% 42.06	% 32.35	% 25.8	% 46.84	% 61.54	% 0	% 46.43

<b>GEOMETRY</b>	% 39.32	% 9.09	% 35	% 42.10	% 0	-----	% 64.4
<b>ANALYSIS &amp; THEORY OF FUNCTIONS</b>	% 39.37	% 23.21	% 18.18	% 41.38	% 66.6	-----	% 55.5
<b>TOPOLOGY</b>	% 37.09	% 16.6	% 28.57	% 24.32	% 66.6	% 100	% 56.81
<b>FOUNDATIONS OF MATHEMATICS &amp; MATHEMATICAL LOGIC</b>	% 38.88	% 33.3	% 16.66	% 23.53	% 0	-----	% 63.63
<b>APPLIED MATHEMATICS</b>	% 38.53	% 14.28	% 26	% 38.76	% 56.52	% 100	% 55.7

From the table, it can be inferred that when the academic position gets higher the number of women mathematicians decrease. For example, if we consider the research assistantship position, we see that % 56 of mathematicians are women, but if we consider the professorship position we see this percentage falls down to % 18. However, this number is still good in comparison to some other European countries. The following graphic shows the situations of higher positions in Turkey.



In order to determine the reasons for the decreasing of the number of women mathematicians in higher positions, let us explain something about the system of getting a higher position in academia in Turkey:

In Turkey, all the academic positions are given by the Higher Education Council of Turkey (YOK). The request for academic staff for units of each university is prepared by relevant department of the faculties and submitted to first to the Dean's office and then, if given approval there, the requests are sent to the President's office, and then these positions are asked from the YOK. The YOK decides on how many positions will be given to which universities depending on these demands. After the requests are assessed by the Rector, the President's Office publishes it on web site of the University and/or on web site of the YOK. If required, advertisements are also published by press such as newspapers etc. For evaluation of candidates, the Dean of the faculty and the head of the department identify three professors or associate professors, in fifteen days. Also, at least one of the jury must be from another university. The Dean sends the relevant documents for each candidate and asks the jury to submit their written comments within one month. This process is the same for associate professor and full professor positions, but for full professor position there are more professors on the jury. After that the Dean and the board of directors consider the written comments for each candidate separately and decide their preference. The Dean offers their recommendations to the Rector, who then makes their decision and makes appointments. Also, there are many scientific criteria taken into account in order to be accepted, but sometimes if you do not have some good personal relations with administrative staff, the process of getting this position will not work very well for you. This is really sad but true.

In Turkey for the associate professorship, there another process available to candidates. The first is getting the position at the university as an associate professor which is already explained in the above paragraph. The second is gaining the title or name of associate professor which is given by the YOK with an exam. The Associate Professorship examinations are held once a year by the Inter-university Board (IEB). Candidates possessing the correct qualifications may apply to the IEB with the necessary documents and publications, also stating their major area of study, specialization and research. The IEB appoints a jury of three

or five members according to the regulations concerning the Promotion and Appointment of Academic Staff, taking into consideration their major area. This jury examines the work, gives the candidates an oral or, if necessary, a practical and applied examination and awards the successful candidates the title of Associate Professorship in the relevant subject. In order to take the Associate Professorship examinations, the following conditions are necessary: 1. After receiving a bachelor's degree, to have received a doctorate degree, specialization in medicine or proficiency in certain branches of the fine arts to be determined by the YOK upon the proposal of the IEB. 2. To have produced original research and publications. 3. To have passed a centralized foreign language examination to be prepared by the IEB.

Now, if we consider the difference between the number of women assistant professors and women associate professors, it will not be wrong to say that the reason is passing that exam. Actually, the case is almost same for the men in mathematics in Turkey. At this point such a question may arise "Are there any gender differences with respect to passing that exam?" To determine whether there are gender differences with respect to passing the exam or any gender bias among the professors in the exam committee, it may be examined in any other detailed research.

As a general evaluation, it can be concluded that the situation of women mathematicians in Turkey is not so bad. For this result, we have to thank Mustafa Kemal Atatürk for his foresight and consideration of women as individuals in society. He gave to women between the years 1926-1934 the right to have equal living, pursuing an educational career and working conditions as the men already had.

There is one point which is necessary to mention here. In Turkey, there are two foundations related to women mathematicians, namely, "Association for Turkish Women in Mathematics" and "Turkish Woman in Mathematics". They also organize some workshops, summer schools, one day meetings, seminars and some other activities as well. They aim to encourage women in mathematics and improve the quality of mathematical researches. They have web pages, respectively: <http://www.turkkadinmatematikcilerdernegi.org/Anasayfa> and <http://twim.bilkent.edu.tr/turkishwomeninmath.html>. We hope that there will be some connections between EWM and both foundations in the future. In the following, we present short reports on the past activities of Association for Turkish Women in Mathematics and Turkish Women in Mathematics.

#### **A Report on Activities of Association for Turkish Women in Mathematics**

In June 2012, a group of women mathematicians in Turkey established the Association for Turkish Women in Mathematics. The aim of the association is to support women in mathematics, both in academic and social areas, and encourage young women to pursue academic careers in mathematics. To achieve this goal the association is trying to bring women mathematicians together by organizing meetings in several formats. The inaugural meeting was held on November 23, 2012 in Ankara at Cankaya University. In this one day activity, two general talks were given by senior women mathematicians and there was a panel session on "Being a Woman Academician in Turkey". More than 100 women mathematicians had attended the activity from Ankara and nearby cities. The second activity was held on February 8, 2013 in Istanbul, at Bahcesehir University with more than 100 participants. The format of the meeting was the same as the first one, two general talks being given by senior women mathematicians following a panel session on "Being a Woman Academic Administrator in Turkey". The third meeting organized by the association was the First Workshop of Women Mathematicians. The meeting was held during May 02-04, 2014, in Gebze, Kocaeli at the Gebze Institute of Technology. The main themes of the workshop were Algebra, Algebraic Geometry, Graph Theory and Numerical Analysis. There were three talks in each area; one general talk given by a senior women mathematician, followed by two talks given by young women mathematicians. There were also poster presentations, mostly done by graduate students. From undergraduate to senior mathematicians, mostly women but also some men, there were nearly 150 participants at this meeting. It is important to note that the membership in the Association is open to all Turkish citizens with a degree in Mathematics or working in a Mathematical field, regardless of being a woman or man. There were no funds for these meetings, except for the support of the host institute. All of these meetings were realized by the dedication of women mathematicians in local organizing committees, members of the association and the participants. The feedback after all three meetings were very positive and promising for the future. **TKMD**

#### **A Report on Activities of Turkish Women in Mathematics**

In 2012, the group of Turkish women mathematicians came together to establish stronger connections and support for Turkish women doing math. In order to improve things for both genders, they study groups organizing summer schools for graduate students. The activities are open to both men and women. Also workshops and seminars are organized. This group focuses especially on the field of Geometry-Topology. The first meeting under the name Geometry and Topology Seminars was on 29 August - 2 September 2012 at Bilkent University, Ankara. In this meeting, there were 2 course lecturers, 5 seminars and 2

colloquiums. The second Geometry and Topology Seminars meeting was held on 26-31 August 2013 at IMBM (Istanbul Matematiksel Bilimler Merkezi / Istanbul center for mathematical Science), Bogazici University, Istanbul. This meeting had also 5 lecturers, 5 seminars and 1 colloquium and panel speaker. For both summer schools, there was no registration fee. The aim of both of these two meetings was to focus on current trends in geometry-topology. After the meetings the feedbacks of the graduate students said that both were very productive meetings. **TWM**

All the information presented in this report is official and taken from the following website.

<http://www.osym.gov.tr/belge/1-19212/2013-yili-yayinlari.html>

Also, there are some personal views and interpretations in this report.

Sema Coşkun (Technical University of Kaiserslautern, Turkey) and

Nazife Erkursun Ozcan (Hacettepe university, Turkey)

## Report on situation of women in mathematics in Spain

We present the results of a survey made by the “Comisión Mujeres y Matemáticas” of the “Real Sociedad Matemática Española” in 2011 regarding the presence and contribution of women in the mathematical academic community in Spain. In order to understand the different labor categories in academics in Spain, we summarize them briefly:

- Full Professor is equivalent to “Catedrático de Universidad” (CU) and in Spain these professors are civil servants.
- Associate Professor is equivalent to “Profesor Titular de Universidad” (TU) and to the recently created “Contratado doctor”. The first (TU) are civil servants. It is also equivalent to “Catedrático de Escuela Universitaria” (CEU) which is an almost extinct category.
- “Titular de Escuela Universitaria” (TEU) is almost extinct as well. This would correspond to Associate professor for Engineering Schools or colleges. However, no PhD was required for TEUs. Those who obtained a PhD were upgraded to the category of TU. Professors holding this position are civil servants.
- The other categories equivalent to lecturer and assistant professor are explained within the text below.

In order to understand the figures below it is also important to note that “men” is abbreviated as an “H” and “women” as an “M”.

Data published by the National Institute of Statistics in Spain corresponding to University Education in Spain in 2009-2010 show that there are 32.4% of women among the university faculty in mathematics (see fig. 1). A more detailed look at the data indicates that only in the lower categories, women exceed this percentage. For instance, 64% of “Ayudantes” (“Ayu” in Fig.1) are women, while among the “Titulares (TU) there are just over 25% women, dropping to less than 9% the percentage of women at the level of Full Professor (“Catedrático”: “CU” in fig.1).

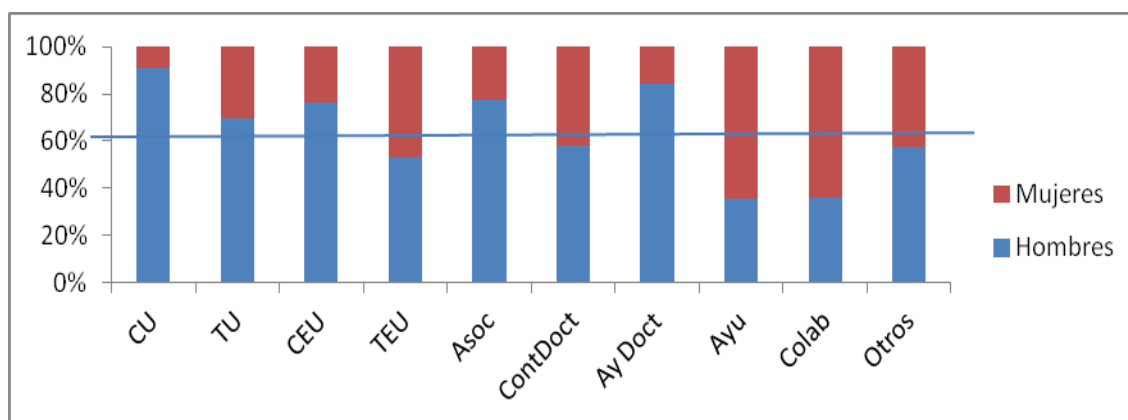
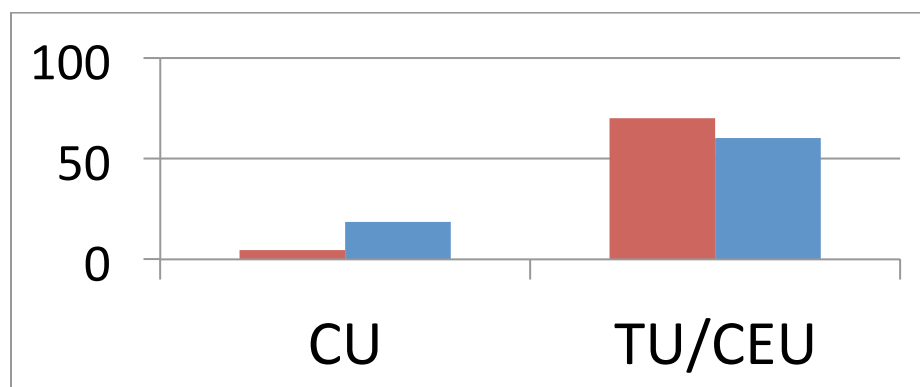


Figure 1. Percentage of female (in red) faculty in maths distributed into different labor categories (source: Instituto Nacional de Estadística 2009-2010). Description of the categories CU, TU, CEU, and TEU can be found above. “Ayudante” (Ayu) is equivalent to Assistant Professor; if they hold a PhD, they are called “Ayudante Doctor” (AyDoc). “Profesor Asociado” (Asoc) and “Profesor colaborador” (Colab) are equivalent to lecturer and no PhD is required for these positions.

The same data indicate that, considering only those categories that require completing a PhD (see fig. 2), about 20% of men have reached the maximum full professor category (“CU” in fig.2), while less than 5% of PhD women are full professors.

This large difference in the proportion of women in the different groups raises questions regarding the professional profile of women in mathematics at Spanish universities. Thanks to a project funded by the Spanish Ministry of Science and Technology, from the Committee on Women and Mathematics we conducted a survey to help analyze this professional profile.

*Figure 2. Percentage of women among permanent categories that require PhD (source: Instituto Nacional de Estadística 2009-2010): women in red, men in blue.*



In this survey, we have obtained a total of 726 responses of which 370 came from women and 356 from men. According to data from the National Statistics Institute, the resulting numbers (after applying a series of filters to remove inconsistencies) indicate that participation was about 43% among women and 18% among men (fig. 3).

Number of answers: 726	
<b>Women</b>	<b>370 ~ 43%</b>
<b>Men</b>	<b>356 ~ 18%</b>

*Figure 3. Survey answers*

The answers indicated that, in the categories of higher level, the average age of women exceeds that of men. So, while a bit more than 18% of male full professors are younger than 45 years, this percentage drops to less than 9% among the female full professors (see fig. 4). Among the associate professors which are civil servants (“titulares”), almost 44% of men are younger than 45 years, while for women this percentage is less than 35%. By contrast, the answers from people contracted in the new profile “Contratado Doctor” (similar to Titulares but not civil servants) indicate that the average age is considerably lower among women than among men.

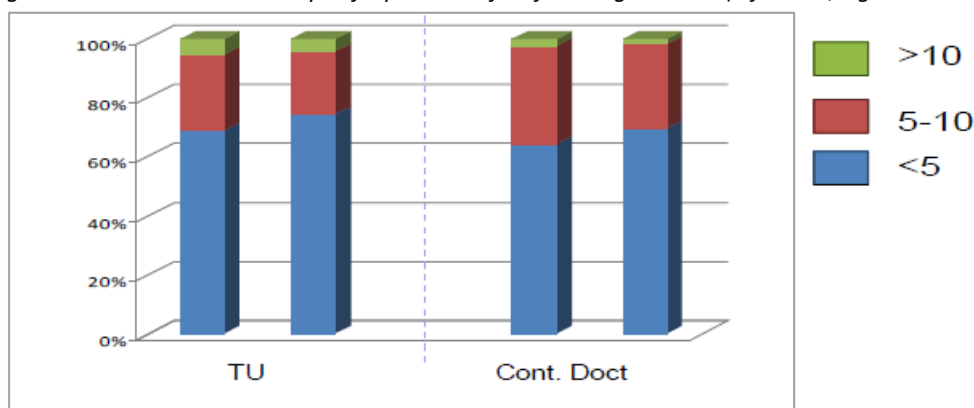
	<b>Associate professors and similar categories</b>	<b>Full professors</b>
<b>Women</b>	<b>35%</b>	<b>9%</b>
<b>Men</b>	<b>44%</b>	<b>18%</b>

*Figure 4. Percentage of answers among people younger than 46 years.*

Among the responses concerning the time elapsed since the completion of the doctorate to achieve the category of Contratado Doctor or Titular, there are no significant differences between women and men, although it can be noted that, on average, this time tends to be slightly lower in the case of women (fig. 5).



Figure 5. Years to obtain the specific position after finishing the PhD (left: men, right: women).



Nevertheless, significant differences between men and women can be observed in the elapsed time to promote an associate professor ("Titular") to a full professor ("Catedrático"). Indeed, over 56% of male full professors had been promoted from associate professors to this category in no more than 10 years, while among female full professors this percentage is reduced to 41%.

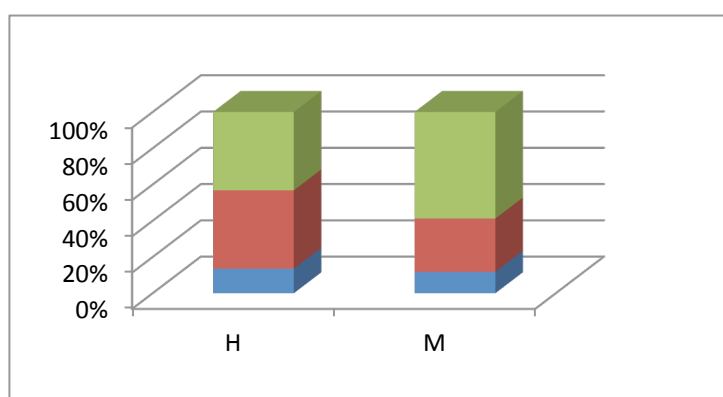


Figure 6. Percentage of answer for the time elapsed to get a promotion from associate professor to full professor: less than 5 years, between 5 and 10 or more than 10.

Among the most used indicators to measure the academic and scientific activity of university faculty are the "quinquenios" (teaching duties evaluated every five years by the Government) and the "sexenios" (research production evaluated every six years by the Government).

Among the responses from all categories considered (with certain exceptions in not very popular categories), the number of "quinquenios" tends to be higher among women than among men (see figure 7). Among full professors, the difference between the percentage of women and men with more than 4 "quinquenios" is less than 4%. However, in the case of "titulares", the difference between the percentage of women and men with more than 4 "quinquenios" is close to 19%. As "quinquenios" can be seen as a measure of years of teaching service, these data complement what we already observed about a higher percentage of women than men ending their careers within the category of associate professor without reaching the upgrade to full professor.

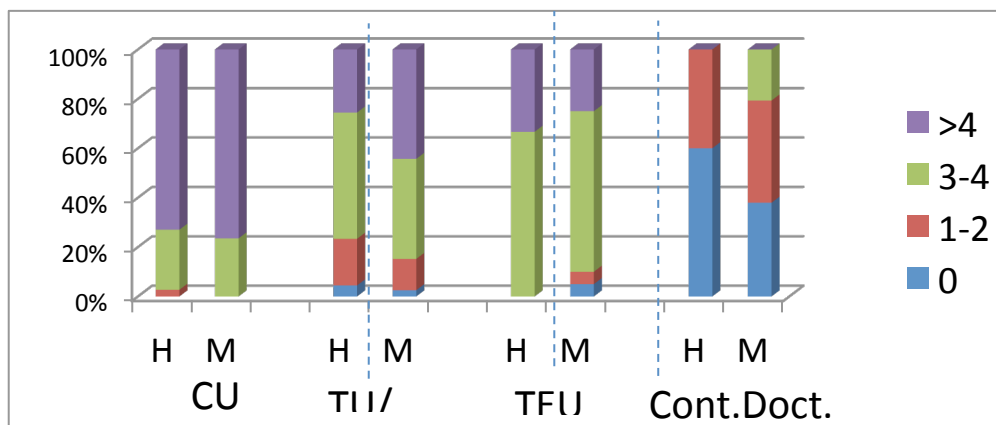


Figure 7. Number of "quinquenios".

On the other hand, the responses on the number of approved “sexenios” indicate that (Fig. 8) among both full professors (CU) and the new category “Contratado Doctor”, the number of “sexenios” is higher, on average, among women than among men. Specifically, the percentage of female full professors with more than 4 “sexennios” exceeds by 25% the same percentage among male full professors; also the percentage of female full professors with 3 or more “sexenios” excess by 10% the same percentage among male full professors . Among the “Contratado doctor”, the percentage of women with 1 or 2 “sexenios ” exceeds by 20% that of men with a similar number of “sexenios”. However, this trend is reversed between “titulares” where the percentage of women with some approved “sexenio” is 72% compared to 84% among men.

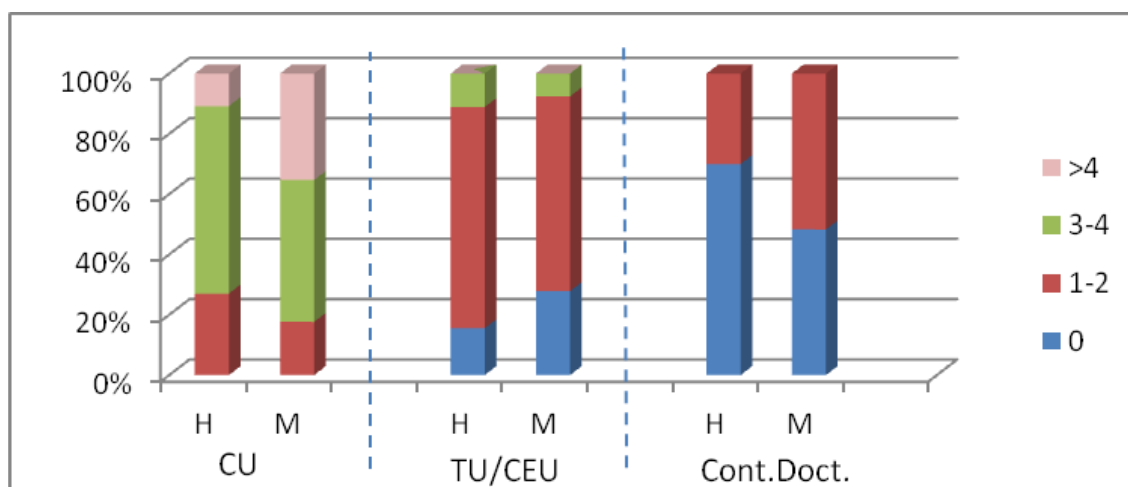


Figure 8. Number of “sexenios”.

The information above is complemented by the responses on the number of articles published in journals indexed in the Journal of Citation Reports (JCR), see figure 9. Among full professors, the number of responses of women with more than 25 publications in journals listed in the JCR exceeds by 15% that of men; this difference disappears if the threshold is set to 16 or more papers. Among “Titulares”, the percentage of women with more than 25 publications in journals of the JCR slightly exceeds that of men, but now the number of answers with 16 or more publications is almost 7% higher among men than among women. Among the “Contratado doctor”, the average number of publications is much higher among men than among women. Indeed, while 50% of men have 10 or more papers, this percentage drops to 30% among women. An important indicator of the visibility of scientific activity is the management of research projects. For international projects, the responses indicated (with some exceptions), little activity and no appreciable differences between women and men (see figure 10). Fortunately, there is a greater project management activity of publicly funded research at the national level. 35% of female full professors have been the principal investigator of more than 5 projects with national funds, exceeding by 12% the same percentage of male full professors. However, the trend is reversed in the case of “Titulares”, where the average number of Principal Investigators in national projects is higher among men. Thus, 31% of men have been Principal Investigators of a project, exceeding by 14% the same percentage among women (which is less than 17%).

## CONCLUSIONS.

One of the main objectives of the Real Sociedad Matemática Española is to encourage and promote high quality scientific activity in all areas of mathematics. It is therefore essential to minimize the loss of talent at both the initial and later stages of learning . From the “Mujeres y Matemáticas committee” we are also promoting the involvement of young girls in the learning of mathematics at the secondary school. We are also sensitive to the loss of talent as a result of subsequent dropouts and, especially, those caused by lack of incentives or obstacles to the promotion. This affects both women and men, although the data we have analyzed suggest that more difficulties arise in the group of women.

The results of the survey indicate that the presence of women in our community is progressively reduced as we move up along the career ladder. However, the answers concerning scientific activity do not seem to justify this reduction.

Something similar happens in representative positions of scientific institutions and societies, where the presence of women is often scarce. However, we have to admit that in recent years the presence of women as elected representatives in national and international scientific mathematical societies is increasing significantly. For example, it is important to mention that there have been female presidents of the “Royal Spanish Mathematical Society” and the “Society of Statistics and Operations Research”. It also very satisfactory that the president of the “European Mathematical Society” has been elected a woman for the first time, who is actually from Spain. We hope that the presence of Spaniard men and women keeps increasing in the international

scientific circles. We want to express our wish to move towards a situation in which the visibility and recognition of each person is based solely on the results of his or her scientific activity

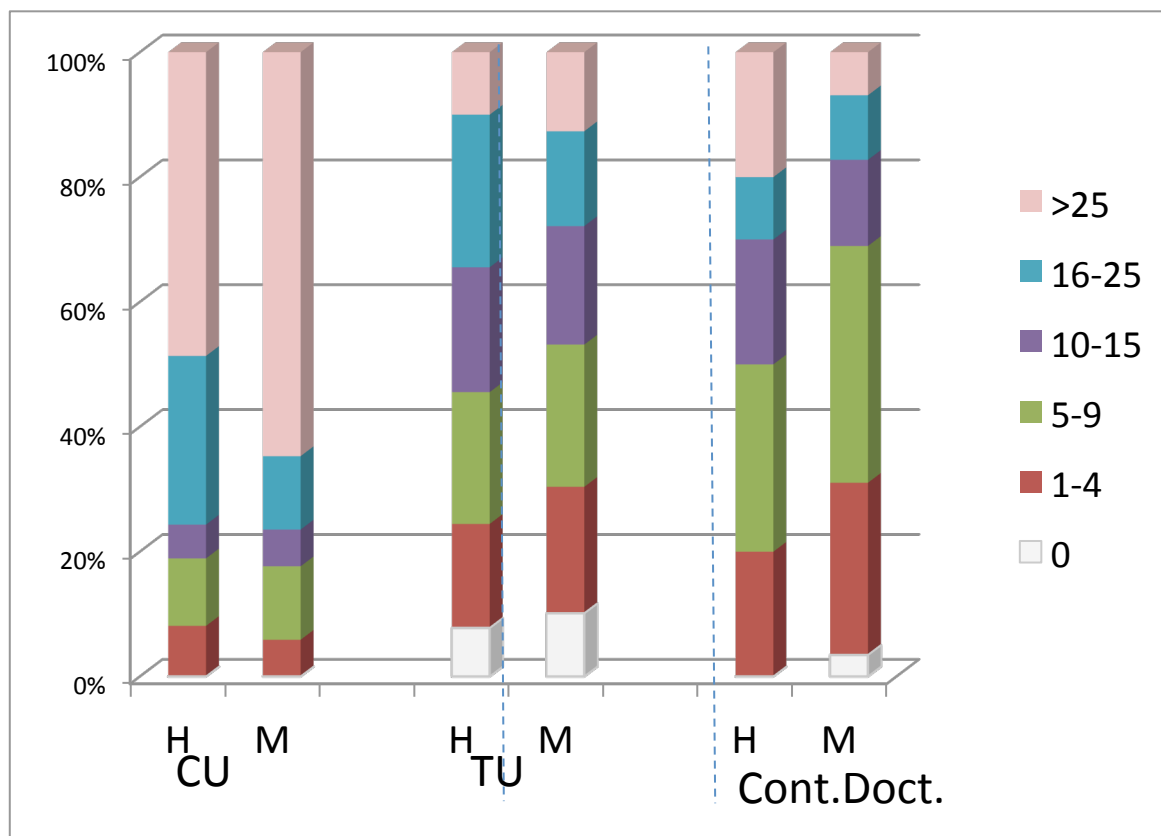


Figure 9. Percentage of answers from people with a given number of published papers.

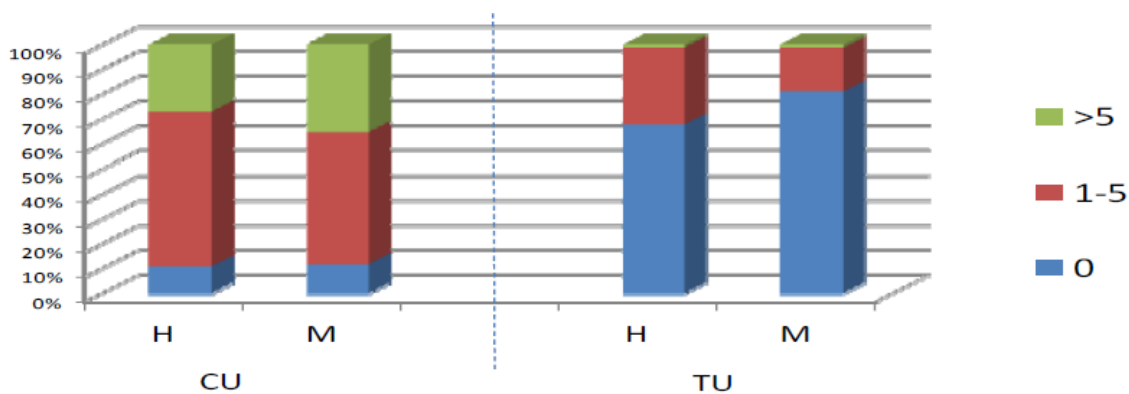


Figure 10. Number of projects where the person has been the Principal Investigator (percentage of answers).

Marta Casanellas, president of the "Mujeres y Matemáticas" committee of the Real Sociedad Matemática Española. Thanks to Elena Fernández for writing the original report and to Gemma Huguet for help with translation into English.

## Report on activities from France

### UPCOMING EVENT

The 14th forum of young mathematicians will take place October 17 to 18, 2014, at the Institut Henri Poincaré in Paris. The 2014 theme is:

*Women mathematicians in view of excellence.*

On October 17, three women mathematicians who were invited to give lectures at the last International Congress of Mathematicians (ICM) in Seoul will give talks : Zoé Chatzidakis (École normale supérieure, Paris), Sandrine Péché (Université Paris Diderot-Paris 7) and Michela Varagnolo (Université de Cergy-Pontoise).

This special 2014 session is part of a series of events which will take place on the occasion of the 20th birthday of the renovation of the Institut Henri Poincaré in Paris. The idea is to show that, in France, mathematics is waiting for more women, while during the last 20 years there have been less and less women mathematicians, especially in pure mathematics: today there are only 7 % of women among associate professors in France. The question is now: will there be any women professors in pure mathematics in 5 years time in France? Women mathematicians in France have been showing their excellence during the last International Congress of Mathematicians in Seoul: six women having a position in France were invited to ICM 2014 - this is more than were invited for many other countries - and a woman, Maryam Mirzakhani, for the first time ever, won the Fields medal.

The 2014 forum is the occasion to shed light on the women mathematicians in France and to show to women students and high school girls that women are welcomed in mathematics.

As usual, the forum is geared toward young mathematicians, women and men, who are performing their doctoral studies or have defended their doctoral thesis recently. Other than the main conferences by invited mathematicians at ICM 2014, the 2014 forum displays parallel sessions with shorter communications. Young mathematicians may, during their presentation, benefit from the presence of senior mathematicians having a look on the purely scientific aspects of their research, and also on their exposition techniques. Mentoring activities are organised as well as activities towards how to find jobs in mathematics in the academia.

The forum is organised by the French association femmes et mathématiques and is sponsored by SFS (Société Française de Statistiques), by SMAI (Société de Mathématiques Appliquées et Industrielles), by SMF (Société Mathématique de France) and by European Women in Mathematics. The forum received grants from the Mission pour la place des femmes au CNRS (Mission for the place of Women at CNRS), from INSMI and INS2I (CNRS Institutes for Mathematics and Computer Science), from MIPADI (Mission of the Ministry for Higher Education and Research for Parity and against Discrimination) and from Institut Henri Poincaré.

Organising committee :

Valérie Berthé (LIAFA, CNRS and Université Paris Diderot – Paris 7)  
Aline Bonami (MAPMO, Université d'Orléans)  
Laurence Broze (EQUIPE, Université de Lille 3)  
Victorita Dolean (Laboratoire J.A. Dieudonné, Université de Nice)  
Colette Guillopé (LAMA, Université Paris-Est Créteil)  
Christian Kassel (IRMA, CNRS and Université de Strasbourg)  
Christine Keribin (Laboratoire de Mathématiques, Université Paris Sud)

### Women mathematicians were honored by the French state in 2014

Several women mathematicians, who are closely related to the French association femmes et mathématiques and/or to EWM, have become members of the National Order of Légion d'honneur, which is the highest honor in France. The first grade is Knight (chevalière for a woman), and the second one is Officer (officière).

Sylvie Paycha, now professor at the university of Potsdam (Germany), was named as Knight. A meeting was organised for this occasion on October 3rd at the university Blaise Pascal in Clermont-Ferrand, where she was a professor for 16 years, entitled "Mathématiquement, Elles" (this might be translated into "Mathematically, Women"). Marie-Françoise Roy (Université de Rennes) and Michèle Vergne (CNRS and Université Paris Diderot -Paris 7) gave mathematical talks and Sylvie Paycha presented a series of portraits of women mathematicians from around the world. Sylvie Paycha is a former president of the French association femmes et mathématiques, and is a very active member of EWM, having been part of organising or scientific committees for several meetings in France or in Europe, and having served as convenor of EWM from 1995 to 1997.

Laurence Broze, professor at the university of Lille 3, was named as Knight and as a foreign member of the french Legion of Honour (there are very few of them). She is a former vice-president of Scientific council and a former director of the Unit for Formation and Research in Mathematics, Computer science, Management and Economics of the university of Lille 3. She has been president of the French association *femmes et mathématiques* for the last two years, after having been a very active member for years. In particular she has been editing statistics about the number of women mathematicians every year, and also of numbers of women mathematician in recruitment jurys. A meeting was organized on March 22 at Institut Henri Poincaré, where Odile Fillod (engineer and author of the blog Allodoxia <http://allodoxia.blog.lemonde.fr/> - in French) talked about "Naturalisation of gender and misuses of science". The French ambassador in Brussels organized in February a ceremony in his prestigious residence to give Laurence Broze the insigna of Officer in the *Palmes académiques* (Academic Palms, designed especially for people working in the world of culture and education).

Véronique Chauveau, professor in the high school Camille Sée, in Paris, already Knight of the "Légion d'honneur", was promoted to Officer of the Légion d'honneur. She is a former president of the association *femmes et mathématiques* and she is now vice-president. She has been creating and organizing activities for high school students, namely, "Les filles et les math : un équation lumineuse" (translated, "Girls and mathematics, a radiant equation"), in collaboration with the association Animath. These days are organized in different cities in France, preferably in a university or in a mathematics institute: a young woman mathematician gives a talk about mathematics, at a level high school students can understand; speed meetings with women mathematicians take place about studies and job in mathematics, and the day ends with a live show-forum discussion session about stereotypes.

Valérie Berthé, research director at CNRS and University Paris Diderot-Paris 7, vice-director of the LIAFA (Laboratoire d'informatique algorithmique, fondements et applications) and vice-director of the FNSP (Fondation des sciences mathématiques de Paris), was honored on October 1st, 2013: she is an active member of the association *femmes et mathématiques*, especially in the organizing of the annual forum for young women mathematicians in France.

Other French women mathematicians have also be named as Knight of the National Order of Légion d'honneur in 2014. Annie Raoult, full professor at Université Paris-Descartes, director of MAP5 (Mathématiques appliquées à Paris 5), was honored on June 23, 2014. Françoise Dibos, full professor at Université Paris 13, director of the Institut Galilée, was honored on September 23, 2014. Karine Chemla, research director at CNRS and University Paris Diderot-Paris 7, specialized in the history of mathematics in the ancient and medieval China, has been named as Knight in 2014. Some more women mathematicians were named Knight in 2013: Ghislaine Joly-Blanchard, professor at UTC (Université technologique de Compiègne); Christine Laurent-Thiébaud, full professor at Université de Grenoble 1, and invited lecturer at ICM 2014, honored on December 2, 2013; Élisabeth Gassiat-Granier, professor at University Paris Sud.

Michèle Artigue has been honored by the world mathematics community. Michèle Artigue, emeritus professor of Université Paris Diderot – Paris 7, former president of the International Commission on Mathematics Instruction (ICMI), has recently been honored by the world mathematics community. She will received in 2015 the Luis Santaló Medal awarded by the Inter-American Committee on Mathematics Education (IACME) "for her significant results in mathematics education, which have been an intellectual reference for our education community". In 2013, she also received the Felix Klein medal awarded by ICMI "in recognition of her more than thirty years of sustained, consistent, and outstanding lifetime achievements in mathematics education research and development". As professor in the Institute for teacher training in Reims, she has especially sustained the women in mathematics community, showing for example how the teaching of mathematics could be more friendly-oriented to women students and to girls.

*Colette Guillopé*  
*Country Co-ordinator, France*



*Shihoko Ishii defended her Ph.D thesis in 1983 at Tokyo Metropolitan University. She became Assistant professor in 1987, being first at Kyushu University and then at Tokyo Institute of Technology, where she became Associate professor in 1990, and then Full Professor in 1990. She is currently Full Professor at the University of Tokyo. As well as her scientific career, she is also married with a child.*

**EWM: When and for what reasons did you choose to follow a career in Mathematics?**

When I was a high school student, I came across the formula of Lorenz transformation in a popular book on the theory of relativity. I was astonished that the formula describes a law of nature that one cannot see. After this I really wanted to find mechanisms which are underneath natural phenomena and dominate the phenomena. I thought that it would be great, if I could be a scientist or mathematician and reveal hidden truths.

**EWM: Did your family, friends or other people give you encouragement?**

When I was a young girl, nobody encouraged me to be a mathematician. Instead, for example, my parents worried about

my “impossible dream”, because we lived in a rural city and at that time there were no positive role models of mathematicians, in particular woman mathematicians. My parents were afraid that I would be a “strange person” if I became a mathematician. But after I was married, my husband understood my hope and encouraged me very much. I believe that the reason why I can continue mathematics is because of his encouragements.

**EWM: Did you come across obstacles in pursuing your career in Mathematics?**

The biggest obstacle is that a day is too short for a woman to take care of a child, keep house and work on mathematics. Even when I managed such a situation and published certain papers in good journals, I could not get an academic position for several years. But I was very optimistic, I thought that there must be persons who understand the value of the research. And it was true.

**EWM: Did you have any strong female role models in your life, scientific or otherwise?**

Yes, Marie Curie, when I was a girl. The other model is Fumiko Yonezawa, a physicist well known in the world as an expert in the research on semi-conductors and liquid metals. When she appeared in a newspaper as the Saruhashi prize laureate, I was a postdoc, I admired her and really wanted to be like her. (Here Saruhashi prize was established by Dr. Saruhashi in 1980 and awarded to a distinguished woman scientist every year.) I read many books written by Yonezawa and all of them encouraged young woman scientists. So I was very happy when I was awarded the Saruhashi prize eleven years later.

*(For those who are unaware of her work, a very interesting short video featuring Prof Yonezawa can be found here:*

*<http://www.youtube.com/watch?v=LBKegdHRvBo>)*

**EWM: What is the situation for women in Mathematics in Japan? Are women present in leading positions at well established universities there?**

Nowadays the job situation for a woman mathematician in Japan has become much better. Many universities want to hire woman researchers in scientific fields. They think that diversity contributes to developments of the organization. But the problem is that there are not so many girls interested in mathematics. So it is our responsibility to show them positive role models and the pleasures of doing mathematics.

**EWM: Could you also write a few lines, understandable to non-experts, briefly describing the topics of your research and your favorite personal achievement in Mathematics?**

I am algebraic geometer working on singularities of algebraic varieties. A very small portion of a curve on an algebraic variety is called an arc. The set of all arcs of a variety becomes again a variety (of infinite dimension) and is called the arc space. The arc space was introduced by John F. Nash in 1968. He also posed a problem, so called “Nash problem” about a relation of the arc space and a resolution of the singularities. This problem has been open for a long time. In 2003, J. Kollàr (Princeton) and I gave the affirmative answer for arbitrary dimensional toric varieties and the negative answer for a general case in dimension greater than 3. This is my first contribution to the theory of arc spaces. Since then I have been fascinated by arc space.

Sara Munday and Jasmin Raissy





*Alicia Dickenstein obtained her PhD in 1982 from the University of Buenos Aires, Argentina, where she has been a Full Professor since 2001.*

*She held invited positions at different institutions in the US, France, Sweden, Brazil, Norway, Greece, the UK and Hong Kong.*

*She has been a Simons Research Professor and an Eisenbud Research Professor at the MSRI, USA, and is currently a Simons Senior Research Associate at the ICTP, Italy (2014-2019). She is Vice-President-Elect of the International Mathematical Union for the period 2015-2018. Besides her research work, she has been engaged in many different synergistic activities at the local, national and international levels. She wrote and coordinated the writing of*

*math books for children aged 9 to 12 years old.*

**EWM: How and when did you come to choose to do mathematics?**

I always enjoyed mathematics but I had no idea that such a career existed. A few months before starting University, I still didn't know what to do so I took a vocational test offered by my high school. It happened that the psychologist giving the test was, in her words, "a frustrated mathematician", who encouraged me to study math. I was wondering which kind of strange people I was going to find... and I was delighted to find my kind of strange people...

**EWM: Were you then encouraged by your family, friends or by other people around you?**

My father was expecting me to become an engineer and probably my mother was expecting me to become an educator. But they supported me because I was at least fulfilling their expectation that I would study at the University.

**EWM: Did you come across obstacles in pursuing your career as a mathematician? If so, could you point out some of them? Do you think some of the possible difficulties are related to the socio-economic situation in your country, or the fact that you are a woman? Please describe the type of difficulty you encountered (and maybe still encounter) and comment on how you overcame these difficulties, if any.**

I did my PhD about residue currents in several complex variables, with analytic, algebraic, geometric and homological ingredients. My advisor, Miguel Herrera, was a brilliant mathematician, who came back to Argentina after some years in France and Princeton just when I was about to start my graduate studies. But one year after I ended, he died suddenly of cancer at the age of 45. He had a big group working with him, but all the other students left research in the following years. My second child had already been born and the economic situation in Argentina was very bad. The salaries were incredibly low. We received no journals, no visitors, even no ordinary mail. There was no one around knowing more than what I knew in the subject or at least with nearby interests in Argentina or in any neighboring country. So, my postdoc years were very difficult. I had to fight against isolation and frustration. But I persevered and eventually found my way with the invaluable help of several math friends. It was also crucial the help from my husband with all family issues.

I had always been a good student,

who would solve the problems posed by others, but I really didn't know what being a mathematician

means. The most difficult task for me, as a "mathematical orphan" in an isolated place with no flow of information, was to learn how to pose my own problems.

**EWM: In retrospect, are you happy to have chosen mathematics or do you have some regrets? What are for you the joys of mathematics? What are for you the hardships of mathematics?**

I am definitely happy. The moment I get to understand some mathematical concept or behavior is pure pleasure. It is not so pleasant to write this down... writing is a very difficult task and less rewarding. Discussing math with colleagues and students is magic and a great part of the job. What is for me spectacular about mathematics is that it is a very "human" activity: people from different parts of the world, different genders, different ages, we all think the same way since our brains are formed by the same laws of nature.

**EWM: What would you recommend a young woman in your country wanting to start a career in mathematics?**

We do not have the economic resources of many of the Northern countries. Even with the spread of information and communication via the internet, it is still a handicap to live far away from the main centers. A flight to Europe or the US takes at least twelve hours and the tickets are very expensive compared with our salaries and grants. But there are of course some advantages: probably the main one is that it is very easy to get childcare at the University and domestic help is affordable, so there is not a clear opposition between family and profession. Also, Argentina has a tradition of mathematics, and there is a small but active community. So the main advice I can give is just to have the decision!

**EWM: Could you write a few lines in an understandable manner to non-experts, describing your topics of research and your favorite personal achievement in mathematics ?**

As I mentioned, I started my research in the realm of several complex variables, in a subject with different ingredients, and it was hard for me to find my way. At some moment I felt that my weakness was that I knew a little bit of many subjects but not much of any one. But then, I managed to make this my strength. I was not working in any established general area and I learnt that, as the Spanish poet Antonio Machado said: “se hace camino al andar”, which means that the path is traced as one walks... My current research interests include several aspects of algebraic geometry and applications, in particular: toric geometry, hypergeometric functions, sparse elimination theory, tropical geometry, polynomial system solving, and I am very interested in algebro-geometric methods for the study of biochemical reaction networks.

**EWM: Do you work alone or with others when you do research? What is the proportion of your coauthors who are women?**

I prefer to work with others as the interchange of ideas leads in general to much better results, besides the pleasure of sharing both the joy and the difficult parts with colleagues. I had 40 coauthors since 2007: 30 of them are male and 10 are female.

**EWM: How many research students did you advise for their MSc or PhD? what is the proportion of women among them ? Do you enjoy advising students?**

I like advising, it is absolutely great to accompany students developing their capabilities. Clearly, it implies a lot of responsibility. This is why I directed many master's thesis, but as I pointed out before, my way to

become an independent researcher was very personal and hard at the beginning, so I only started advising PhD students later in my career. Up to now, 6 out of 16 of the master's students and 2 out of 6 of the PhD students I advised are female (one is ongoing).

**EWM: What kind of responsibilities have you taken on in your country in the scientific community? Do you like to organize things?**

I was the head of my department 18 years ago, quite young. It was the first time a woman took this responsibility. Since then, I participated in the Council of our School, I have coordinated the doctoral program in Mathematics, I integrated many evaluation committees, etc. I coorganized many synergistic activities at very different levels, from domestic seminars or national schools to a semester at the Institute Mittag Leffler or several editions of the biennial MEGA meetings (Effective Methods in Algebraic Geometry). I also participated in outreach activities at the primary or high school levels. I enjoy a lot all these activities. This year, I am coordinating a national report on mathematics, proposed by the two Academies of Sciences of Argentina to the Ministry of Science and Productive Innovation.

**EWM: You have been elected vice-president of IMU in Korea and you are the first vice-president from Argentina ever. Moreover the next ICM will take place in Rio. How to you envision your action at IMU?**

I will be the first member of the EC committee from a Latin American country other than Brazil. Marcelo Viana from Brazil is one of the current Vice-Presidents of the IMU and Jacob Palis, also from Brazil, was for 1983 to 2006 a member of the EC Committee; in particular, he was IMU President during the period 1991-2002. I am very happy that the ICM 2018 will take place in Rio. This is well deserved given the level of mathematics in Brazil, but I also

hope that the good mathematics from all the region will be more visible. Being Vice-President of the IMU is very challenging, almost all scientific matters are interwoven with political subtleties. I will first learn how things work and listen to many people, and then devise what I can do. My dream would be to be able to help mathematicians from all over the world to devise good projects and to find the means to make these projects a reality, in particular in adverse environments.

**EWM: Can you tell us a little about your family life right now? Are they supportive of you?**

They got used to me working and travelling a lot. This was not easy but they are very supportive and make my life full.

**EWM: What do you think of ICWM and do you have ideas to improve it?**

I understand that there are good reasons for ICWM to exist, but I hope that in the near future ICWM and ICM will be just one meeting. In the meantime, it will be good not only to increase the participation of qualified women as invited speakers of the ICM but also to give ICWM a distinctive structure. I have some rough ideas, but I still need to discuss them with others before proposing them.

**EWM: Would you like to add something we did not think of asking you?**

An important issue that we must face is to improve the communication of mathematics (and mathematical thinking) to the general public, to children and teenagers and their teachers, to politicians, and also to scientists in other disciplines.

Marie-Francoise Roy





*Betül Tanbay defended her Ph.D thesis in Mathematics at the University of California, Berkeley, in 1989. She is the head of the Turkish Mathematics Society, and she is member of the Raising Public Awareness Committee and of the Ethics Committee of the European Mathematical Society. As well as her active scientific career, she is also married with children.*

**EWM: How and when did you come to choose a career in Mathematics, and was your decision supported by your family and friends?**

When I look back, I have the feeling I never "chose" a career, it was a natural continuation of a desire to know more mathematics.

**EWM: Are you aware of a significant number of women in your country working in modern fields of Mathematics? In particular, are there many women in senior positions?**

Turkey is sitting on very old and culturally rich soil, so it has complex properties. About one woman a day are killed by their husbands who refuse their wish of divorce. On the other hand, half of my department consists of women, the president of the Turkish mathematics society is a woman, the rector of my university is a woman.

**EWM: In retrospect, are you happy to have chosen mathematics, or do you have some regrets? What are for you the joys of Mathematics? What are for you the hardships of Mathematics?**

Regrets? I have a few....:) Not having learned more! Every single day, even when I read a newspaper, I am happy to see how mathematics can help to keep our brains serene, in a world where "civilisation" and "humanity" are in serious crisis. What is hard in Mathematics is the degree of dedication needed. It is a possessive field, to be good you have to fully concentrate.

**EWM: Are there dedicated efforts to encourage women to undertake advanced training in Mathematics in Turkey?**

Even in the phase of our history when people would say, "my son should study but not necessarily my daughter", once you were part of the women who studied, no-one told us that, "women are not good in math". This must be an occidental myth.

**EWM: What advice would you offer to a young woman aiming for a career in Mathematics?**

For a woman who does not want children, the same I would to a man, that it is a wonderful choice. To a mother or a mother-to-be, I would warn that research and motherhood can have space-time problems.

**EWM: Could you also write a few lines, understandable to non-experts, briefly describing the topics of your research and your favorite personal achievement in Mathematics?**

I fell in love with a long-standing open problem, a year older than me. It was set by Kadison and Singer in 1959, physics being the source and operator algebras the possible solution. They had shown that in the

continuous case, pure states extensions from some subalgebras (masas) to the full algebra of bounded linear operators were unique and conjectured that the same was true for the discrete case. Many "small and big guys and girls" worked on the subject until last year the solution came from polynomials! All I can say is that I am proud to be on the reference list of the solution paper and that a few colleagues named  $p_B$  a projection I got stuck with!!!

**EWM: You are quite well known around Istanbul as a member of the Taksim Platform. Could you tell us a little about this movement and your part in it?**

We formed TP with an architect friend in 2011, after general elections where the main promise was a civilian constitution (allow me to remind the readers that all constitutions written in the Republic of Turkey so far have been written by the military). A so-called "crazy project" was also launched during election campaign on Taksim square which totally ignored citizen participation and annihilated the environment, the history and the pedestrian life of the square. We said, "let this project be a rehearsal for the new constitution which would reflect our wish to live together". Unfortunately the participation demand has been responded to by a politics of polarization and authority which lead to the famous "Gezi protests" of the youth all over Turkey.

**EWM: Why do you find it important to be politically active, when you must already be extremely busy with your research and family life?**

I do not find it important to be politically active, I am wishing to live in a neighbourhood where I can peacefully do mathematics and enjoy life... but mathematicians also need to breathe and to walk!!!

## Report from the ICWM

The second International Congress of Women Mathematicians took place in Seoul, Korea, on August 12 and 14, 2014, just before and simultaneously with the ICM in Seoul.

There were 52 countries represented in the registration and 97 contributed posters. The program included 7 plenary talks, a special lecture by IMU president Ingrid Daubechies, a workshop on geometric constructions of mosaic designs, and a panel discussion on the topic “Mathematics and Women: Different Regions, Similar Struggles”. The meeting concluded with a “networking” banquet to which were invited talented Korean female high school students who have shown an interest in mathematics; they were given the opportunity to spend time with professional mathematicians, and discuss their own aspirations and learn about the career paths of some women mathematicians.

The first day of the meeting was held at EwhaWomans University, the largest women’s university in the world (boasting a student body of over 20,000 students). The campus is quite beautiful and the buildings and grounds are architecturally impressive. The second day of the meeting was at the COEX conference center, where the ICM was held, running parallel to the afternoon session of ICM invited lectures. In between these two days, the opening ceremony of the ICM was held, and the recognition of Maryam Mirzakhani’s work by the attribution of a Fields Medal gave a feeling of special significance to this year’s event.



The seven plenary lectures over the two days covered a wide range of topics and were given by mathematicians at various stages in their careers. All speakers gave their best to present their research in a way that gave many possible viewpoints on the topic, such that mathematicians from different fields could connect to.

In the first morning talk, Donna Testerman explained how to use representation theory to study simple linear algebraic groups. Next, Hee Oh introduced Apollonian Circle Packings and Gabriella Tarantello talked about analytical, geometrical and topological aspects in the study of Chern-Simon vortices. In the afternoon talks, Laura DeMarco gave a beautiful overview on results and conjectures around the Mandelbrot set, and Motoko Kotani talked about her achievements in material sciences using discrete geometric analysis during her work as director of AIMR Tohoku University.

Thanks to the warm personal introductory words of the chairs, young women mathematicians could also identify their role models. For example, we found out that Donna Testerman had to commute many years by airplane, and even taught in a non-university environment for some time, but was persistent and so finally got professor at EPFL Lausanne.

On the afternoon of the second day, there were two further plenary lecture, the first by Jaya Iyer, where she gave a nice overview of the theory of invariants of vector bundles on manifolds and raised some open questions in the area. Isabel Dotti then discussed the theory of conformal Killing-Yano tensors, which is a generalization of conformal vector fields which has had many applications in physics. At the end of the second day, Georgia Benkart gave the Emmy Noether lecture at the ICM.

The panel discussion, chaired by Prof. Barbara Keyfitz, discussed the situation of women mathematicians in four continents: **Marie-Francoise Roy** represented Europe, **Marie Françoise Ouedraogo** Africa, **Maria Ines Icaza Perez** South America, **Shihoko Ishii** spoke for Japan, **Soon-Yi Kang** for Korea and **Dongmei Xiao** for China. Each of the panel members gave an overview of the situation of women in mathematics in their respective region, the percentages of women at different stages in their careers, the obstacles encountered specifically by women and the mechanisms which in some cases have been put in place to encourage women to pursue careers in mathematics and to overcome the aforementioned obstacles. Members of the audience were then given the opportunity to supplement the discussion with information about their own countries or experiences; this included contributions by participants from Mexico, Germany, Kenya and Indonesia.



*The poster session at the ICWM*

One thing which was made evident by these presentations and discussions is that the issues affecting women in mathematics in the different countries depend in an essential way on the general economic and social situation. For example, in some places, childcare is not a problem as it is not difficult to find people who are willing to care for children; but on the other hand the general infrastructure is lacking (e.g., library and computer facilities). While in other places where there are sufficient funds for infrastructure, the obstacles are the lingering stereotypes which prevent women from pursuing (scientific) careers.

The local organizing committee, chaired by Dr. Sunsook Noh, launched a fund-raising drive during the months preceding the meeting in order to be able to offer travel grants to 100 attendees from developing countries. This drive was quite successful, with individual and institutional support from around the world. The meeting was exceptionally well-organized, thanks to the local organizing committee, the Korean Women in Mathematical Sciences, and a team of student interns and volunteers.

*Carina Geldhauser (Bonn) and Donna Testerman (Lausanne)*



## The ICM 2014 in Seoul: an event tinged with pink

The 27th International Congress of Mathematicians took place in Seoul (South Korea) from the 13th to the 21st of August 2014: the media coverage of this event all over the world has been such that certainly no one missed at least the main fact, namely that for the first time a woman was honored with one of the four Fields Medals, the most coveted award in the world of mathematics: the 37-year-old Iranian Maryam Mirzakhani, full professor at Stanford University in the United States. Her research topics include hyperbolic geometry, ergodic theory and symplectic geometry.



However even if the general focus was mainly on her, the other three winners, Artur Avila, Brazilian-French mathematician, expert in dynamical systems and spectral theory, Manjul Bhargava, Indian number theorist born in Canada, and Martin Hairer, Austrian now in Great Britain, expert in stochastic partial differential equations, also received due attention. It was impossible not to give credit to them, brilliant, young and interesting as they were, proud to step on the podium before the fateful 40 years, the age limit which cannot be exceeded for the award of the super-medal.

Nevertheless, in all the many articles which have been written in newspapers and magazines all over the world, in print and on line, not very much has been said about how this Congress looked from inside, to those who had the opportunity to see in loco with their own eyes the great show that the Korean people, under the guidance of Hyungju Park, the local organizer and now new member of the Executive Committee of the International Mathematical Union (IMU), were able to stage.

The proposal to organize the ICM in Seoul was presented and approved by the IMU General Assembly of Bangalore in India, shortly before the ICM in Hyderabad in 2010. The IMU General Assembly is a kind of parliament of mathematics, which gathers together the delegations of all the countries which adhere to the IMU through their national organizations before each International Congress. The Italian adhering organization is the Istituto Nazionale di Alta Matematica "Francesco Severi" (INdAM) and, like all the other countries in collaboration with their National Mathematical Societies, in our case the Unione Matematica Italiana (UMI), it arranged things so as to send its delegation to South Korea. This year our delegation was formed by Ciro Ciliberto, President of UMI, Piermarco Cannarsa, Alessandro Verra, Franco Brezzi, who was also in the glorious list of the 21 plenary speakers and myself, as Deputy President of INdAM.

Four years ago, as soon as the venue for the next ICM was decided, the organizing machine went into action and, while the members of the panels nominated by IMU with the task of choosing the invited and plenary speakers started their work, the members of the organizing committee launched themselves in a marathon whose goal was to find the funds and the right people to carry out the organizational programme, study the location and space available, and so on.

The venue chosen for Seoul was the COEX, a gigantic complex formed just to host meetings, which has the peculiarity of having the biggest shopping mall in Asia in its underground. Situated in the area of Gangnam, central and elegant, populated by skyscrapers flashily illuminated at night, the COEX represented the perfect location for the purpose. Taking into account that there were 5000 participants to this edition of the ICM and that the registration fee included invitations to the welcome dinner, the opening ceremony and the conference dinner, the huge halls of the COEX proved themselves perfect for all these people. The scheme of the program was similar to that of the previous congresses, namely the plenary lectures took place in the largest halls while the invited section lectures were in a series of rooms, scattered around but easy to find thanks to the help of a legion of Korean students hired for the purpose, so zealous that instead of showing the location of the room on the map of the COEX, they took the trouble to guide visitors personally to the right place.

The architects who planned the COEX didn't have budget problems: first class quality for the building materials, intelligent design and spacious common space. In effect, the latter offered a remarkable counter example to whoever may worry about the usefulness of big congresses, considering them too dispersive: no, they are not, judging from the nice sight of all those young people from 120 countries, who during the intervals were sitting on the benches overlooking the large glass windows of the COEX, making comments on the talks and chattering to each other, their laptops on their knees. That was truly scientific exchange, exactly what they were looking for.

So one can understand that the Opening Ceremony of the ICM was organized in the right place. My memory of this extraordinary event concentrates on some specific flashes. The first one is that on the official IMU website, contrary to

tradition, the names of the Fields Medals winners appeared officially some hours in advance, due to a technical problem; not everyone had seen the announcement, but we delegates to the General Assembly, which took place three days before in Gyeongju, in the part of South Korea which faces Japan were informed, even if we were sceptical about this decision.

So, when Maryam Mirzakhani arrived inside the main hall, we already knew that she had been awarded the Fields Medal.

For this reason, while we were all waiting for the start of the Opening Ceremony, I really couldn't resist reaching over to her, as she was sitting very close to me. I just wanted to say to this petite woman with two wonderful eyes and an expressive face how immense was the happiness of all the women in the hall for this wonderful piece of news. She saw I was moved while I was speaking to her, so she took the hand I was holding out to her, gracefully, simply, gently. There was not a bit of haughtiness in her expression, only the awareness of something enormously meaningful for someone had devoted her entire life to cope successfully with mathematics, with all the pros and cons which this involves.

When I went back to my seat, near the other members of the Italian delegation (who during the entire journey behaved impeccably, doing their best to keep up the prestige of Italy belonging to the IMU class V, namely the highest, even if this goal implied fighting heavily against jet lag, a long flight from Italy to South Korea, a typhoon in Gyeongju, lost baggage, and other troubles), everything seemed to me after all to be secondary. But this was unfair, as more surprises were still to come. For example, there was an important novelty in that Jim Simons, the American mathematician, hedge fund manager and philanthropist who through his Foundation supports projects in mathematics and in research in general, produced four short movies on each of the Field Medalists which were really outstanding. During their showing, Artur Avila appeared while he was doing research in his office at IMPA, Rio de Janeiro, Martin Hairer while he was strolling on the campus of the University of Warwick, Manjul Bhargava with the buildings of Princeton on the background and Maryam Mirzakhani kneeling with a felt-tip pen in her hand on a large white sheet of drawing paper unrolled on the floor, full of Riemann surfaces and formulas spread all around, a strange way of working. Thanks to these short movies, we could see them in their daily lives, within the walls where their beautiful ideas came into their minds.

Another surprise was the announcement that Phillip Griffiths, star of American mathematics, who has carried out widespread work inside IMU in the Committee for Developing Countries, decided to hand over the 250,000 dollar prize related to the Chern Medal he had just won to mathematics in African countries: not words but deeds.

Moreover one cannot discount the speech of the President of the Republic of South Korea, Park Geun-nye, a woman, given all in one breath, without notes or slides. This was a Korean tribute to mathematics and its insiders, which was indeed rather realistic, judging from the enormous technological progress of the country, which has arisen from the ashes of the Korean war as a fully-developed society in which research and education are on the frontline.

Besides the vast choice of plenary and section lectures in all the main research areas of mathematics, the special lectures were also very interesting, for example the Emmy Noether Lecture which is given by a female speaker, this time the American Georgia Benkart, who illustrated the connections between the Schur-Weyl duality and the McKay correspondence, plus a range of public lectures, such as the one given by Jim Simons which nobody missed, if for no other reason than to see in person the man who has made a fortune with his hedge funds and then assigns a consistent part of it to financing structures and initiatives for mathematics. He should be made a saint!

An aside: it's useless to hope that the next edition of the ICM will take place in a town closer to Europe, as the General Assembly in Korea has approved Rio de Janeiro as location for 2018. Nevertheless, let's cheer up, because for us Europeans the ICM will be easier to reach in 2022, as the General Assembly in Rio will hopefully approve the proposal made for an ICM in Paris.

These are not minor details, if once in a while we could save ourselves many long hours of flight, for us Italians it would be great: in Seoul we were less than twenty people overall, due to the financial crisis. It took a degree of heroic spirit to reach South Korea, which is not around the corner and with few direct flights to Seoul. But strictly for the record, when the Italian delegation arrived in Gyeongju for the General Assembly, after twelve hours of flight, three of bullet train, one of bus, we remained wrongfooted by Alice Dickenstein, the new Vice-President of IMU, who arrived from Argentina via Dallas, and because of this route had been travelling for 25 hours, but seemed in perfect shape, unlike us, who were sleepy with jet lag and starving.

The presentation of the Brazilian bid for the ICM 2018 has been approved with obvious enthusiasm, not least because it will be the first time that the ICM takes place in the southern hemisphere. We couldn't prevent ourselves from smiling when, during the slide show about the architectural structures proposed for the event, we saw a picture of the Maracanino, namely a stadium slightly smaller than the legendary Maracana, but very close to it.

Even if I risk being boring by underlining the female presence, one should say that at this edition of the ICM, in which there was one Italian plenary speaker, Franco Brezzi, and 8 sectional Italian speakers, precisely Andrea Braides, Annalisa Buffa, Luigi Chierchia, Alessio Figalli, Andrea Malchiodi, Gabriella Pinzari, Michela Varagnolo and Umberto Zannier, my country obtained the following considerable result: as far as women speakers is concerned, we were in the third place, as the United States had eleven women speakers, France seven and Italy three.

And perhaps it would be nice to add that one day before the Open Ceremony of the ICM, namely on the 12th of August, the International Congress of Women Mathematicians, ICWM 2014, took place at the Ewha Womans University in Seoul and the invited speakers included Gabriella Tarantello, of the University of Rome "Tor Vergata", namely my own university. A little bit of local pride is never inappropriate.

So think what you like: these were great satisfactions, taking especially in consideration the masterstroke of Maryam, the marvellous heroine of this unforgettable ICM!

*Elisabetta Strickland (EMS-WIM Committee)*

This reportage was translated into English from the original version published in Italy by MATEPRISTEM:

<http://matematica.unibocconi.it/articoli/icm-seoul-2014-un-congresso-internazionale-dei-matematici-tinto-di-rosa>

## New International Women in Maths Website

As many of you probably already know, at the ICWM in Seoul on August 12th 2014 the International Mathematical Union (IMU) launched a new section of its website dedicated to women mathematicians: [www.mathunion.org/wim](http://www.mathunion.org/wim)

The aim of the site is to provide an international resource for female mathematicians by collecting information, showcasing achievements, announcing events and sharing useful ideas and resources. The pages were created by the IMU Women in Maths Webpages Advisory Group under the oversight of the IMU as a service to the international mathematical community.

If you haven't yet visited the site do take a look. Don't miss the News blog -- the box on right hand side of each page -- or go direct to <http://blog.wias-berlin.de/imu-wim-news/>

We welcome information which you think might be added to the site. Please send it to [info-for-wim@mathunion.org](mailto:info-for-wim@mathunion.org) following the instructions in the box on the top right.

Some further exciting news: following the example of the European Maths Society, at its meeting on August 12 the IMU Executive Committee decided to create a committee whose remit will be to promote international contacts between national and regional organisations for women and mathematics and to undertake other related activities. A small international group has been set up, chaired by IMU President Ingrid Daubechies, to work with the EC to define the terms of reference and organizational structure of the new committee. The group's proposals will be submitted to the EC at its meeting in Spring 2015. We look forward to hearing more about this in due course!

*Caroline Series, Warwick, UK*

## Congratulations

We would like to congratulate Frances Kirwan who has been made a Dame, which is the female equivalent of being a "Sir". More precisely, in the 2014 New Year's UK Honours she was appointed "Dame Commander of the Order of the British Empire" (DBE) for "services to mathematics", see <http://www.maths.ox.ac.uk/node/24004>.

We also congratulate Sylvie Paycha, Laurence Broze, Valérie Berthé, Annie Raoult, Françoise Dibos, Karine Chemla, Ghislaine Joly-Blanchard, Christine Laurent-Thiébaud and Élisabeth Gassiat-Granier, for becoming Knight of the french Legion of Honour, and Véronique Chauveau, already Knight, for being promoted to Officer. The Legion of Honour, or in full the National Order of the Legion of Honour (French: Ordre national de la Légion d'honneur) is a French order established by Napoleon Bonaparte on 19 May 1802. The Order is the highest decoration in France and is divided into five degrees: Chevalier (Knight), Officier (Officer), Commandeur (Commander), Grand Officier (Grand Officer), and Grand Croix (Grand Cross).

Many congratulations also to Michèle Artigue who has been honored by the world mathematics community.

And, last but certainly not least, congratulations to Maryam Mirzakhani, the first female recipient of the Fields Medal!

## MISCELLANEOUS

### A new study on gender stereotyping in mathematics

Gender stereotypes that emphasize the conception that males are more competent in mathematics than females can greatly impact girls and women by impairing their performance in and learning of mathematics, and causing them to devalue their actual mathematical ability while also placing less value on success in the subject. The effects of this stereotype are not necessarily conscious, girls' behaviour is impacted even when they are apparently unaware of any negative associations.

This was revealed by an article recently published in the journal Learning and Individual Differences (Volume 34, August 2014, pp 70-76), the result of a collaborative effort between the Universities of Trieste and Bologna coordinated by Maria Chiara Passolunghi.

The conception that considers males best and more gifted than females in the mathematical domain can be considered a "gender stereotype". The problem is that owning this stereotype not only can negatively affect the skills and mathematical learning of females, but can also influence their future educational choices and work and how they tackle a mathematical challenge. Deeming oneself competent and gifted in a particular domain strengthens self-confidence, commitment, and persistence to the task. Even if the belief that one does not measure up to a test is mistaken, it is unlikely that a person will decide to face it.

The article has analysed the presence of gender stereotyping in mathematics in Italian children and adolescents. The results have revealed that the stereotype "males are better than females in mathematics," is absent at explicit level in both genders. Nevertheless the measurements made using appropriate tests (which assess automatic associations between the concepts of gender and mathematics), prove that this stereotype is instead present at implicit and unaware level in females, as early as the first years of primary school, and is therefore still more insidious because it affects their behaviour unintentionally. A further result of the research is to point out that the stereotype acts on perception of ability: on the one hand, in males adherence to the stereotypical conception enhances their view of their own abilities, on the other, in females it has a negative effect, and devalues it.

The results emphasize the need to act from an early age to avoid the negative effects of stereotypes. The role played by teachers and parents is certainly very important. The perception of competence and confidence in their abilities is crucial in the learning process and promotes and fosters a positive climate for learning, which aims to highlight and support the skills of each individual.

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## **The first Caucasian Mathematics Conference**

This conference was held in Tbilisi, Georgia, during the first week of September and it received an interesting write-up in the Hurriyet Daily News (written by Betül Tanbay, who is interviewed above). Let us quote the most relevant section, taken from directly after a discussion of the NATO conference being held in Wales at the same time:

"At the same time, the first Caucasian Mathematics Conference (CMC), held in Tbilisi, Georgia was certainly not a center of public attention. There, mathematicians of the Caucasus gathered as part of their goal to provide "joint research, science and values" to generate solutions to mathematical problems from Russia to Georgia, from Azerbaijan to Armenia. Yes, the mathematical societies of Armenia, Azerbaijan, Georgia, Iran, Russia and Turkey came together to create the CMC project and to get to know each other, share their work, research and results, and to jointly navigate toward new areas of research in mathematics.

Before anything else, the European Union was a peace project, but it was not able to surpass the necessary frontiers, could not deal with the "other." However, the rulers of the European Mathematical Society (EMS), as soon as the Turkish Mathematical Society presented the idea, immediately understood the meaning of the CMC and took the project under its auspices. This support allowed the involved countries to get together smoothly, and the quality of the debate on mathematics naturally became their first priority. Internationally renowned mathematicians of the region were "invited speakers": Garip Murshudov from the Cambridge Molecular Biology Laboratory, Leon Takhtanjan from Stony Brook University, Samson Shatashvili from Trinity College, Mohammad Sal Moslehian from Ferdowsi University, Dmitri Orlov from the Moskow Steklov Institute, Cem Yalçın Yıldırım from Boğaziçi University, and Maria Esteban from Paris-Dauphine University. This illustrious list was extended with a list from each country of two younger promising mathematicians who attended as invited speakers. Overall, more than 200 mathematicians registered to the first CMC!"

The full article can be accessed here:

<http://www.hurriyetdailynews.com/who-is-closer-to-peace.aspx?pageID=238&nID=71707&NewsCatID=396>

## USEFUL LINKS AND CONTACTS

**EWM website:** <http://www.europeanwomeninmaths.org/>

**EWM convenor:** Susanna-Terracini      [susanna.terracini@unito.it](mailto:susanna.terracini@unito.it)

**EWM deputy convenor:** Angela Pistoia      [pistoia@dmmm.uniroma1.it](mailto:pistoia@dmmm.uniroma1.it)

**EWM email list:** Katrin Leschke      [k.leschke@le.ac.uk](mailto:k.leschke@le.ac.uk)

**Other organisations** with similar aims to the EWM:

The European Mathematical Society (EMS): <http://www.euro-math-soc.eu/>

EMS Women in Mathematics Committee: <http://www.euro-math-soc.eu/comm-women.html>

France: Femmes et mathématiques: <http://www.femmes-et-maths.fr/>

UK: LMS Women in Mathematics Committee: [http://www.lms.ac.uk/activities/women\\_maths\\_com/](http://www.lms.ac.uk/activities/women_maths_com/)

**Job announcements:**

<http://www.math-jobs.com>

<http://www.jobs.ac.uk/>

<http://www.euro-math-soc.eu/jobs.html>

**Membership:** The membership fee can be paid by credit card or Paypal via the EWM website, or by direct transfer to the EWM bank account. For more details, see

<http://europeanwomeninmaths.org/about-us/membership>