

### **BIANNUAL REPORT**

#### **EUROPEAN WOMEN IN MATHEMATICS 2022–2024**

#### **SPAIN**

As the Chair of the Commission on Women and Mathematics of the Royal Spanish Mathematical Society (RSME), I am pleased to present this biannual report detailing our initiatives and activities carried out during the period 2022–2024. Our mission is to promote the visibility and contributions of women in mathematics, foster equality, and address gender disparities in the mathematical sciences.

Members of the commission during this period (alphabetical order): Clementa Alonso González, Saray Busto Ulloa, María Cumplido Cabello, Soledad Fernández García, Anabel Forte Deltell, María García-Monera, Ana González Suárez, María Sancosmed Álvarez, Laura Saavedra Lago y Noèlia Viles Cuadros.

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#### **Overview of Women in Mathematics in Spain**

The figures in Spain are not very encouraging. In the academic year 22/23, 37.1% of students enrolled in mathematics degrees were women. These figures have worsened since 15/16. Approximately 50% of women complete their doctorate, although obtaining scholarships presents an unequal percentage compared to men. Between 2015 and 2020, the number of women with a doctorate has fallen by 19%.

In the Spanish university system, 43% of research staff are women, and 22.5% of chairs are held by women. In Mathematics, this percentage drops to 12%, although the trend is increasing, indicating that the gender disparity is even more pronounced in mathematics compared to other disciplines.

In Spain, the probability of a male associate professor being promoted to full professor is 2.5 times higher than that of a woman with similar personal, family, and professional characteristics. A man with children has a probability 4 times greater of being promoted to full professor than a woman with children with similar characteristics.

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#### **Activities and Initiatives (2022–2024)**

### **1. Round table: You had to be a mathematician**

**Date:** May 12, 2022

**Location:** In our Youtube channel

<https://www.youtube.com/channel/UCeHHVauESn8hREiFoGPEB5Q>

**Description:** Round table to commemorate Women in Mathematics Day featuring five women, including two undergraduate students and three professionals with diverse careers (a consultant, a high school teacher, and a university professor who is also the president of the RSME). This activity, particularly aimed at undergraduate and master's students, seeks to highlight the various career paths available and to discuss different challenges faced by women in their professional journeys, as well as how they have addressed and overcome them.

We envisioned a more 'positive' activity to showcase women actively working in mathematics and to inspire future generations.

### **2. MyM talks: (MyM stands for Mujeres y Matemáticas)**

**Location:** In our Youtube channel

<https://www.youtube.com/channel/UCeHHVauESn8hREiFoGPEB5Q>

**Description:** An initiative through which live streams will be hosted on our YouTube channel every one or two months, featuring women from the STEM field with the aim of raising awareness and promoting the visibility of women in these disciplines.

### **3. Mentorship program SteMatEsElla.**

The initiative is a joint proposal between the Royal Spanish Mathematical Society (RSME) and the Spanish Association of Executives and Board Members (EJE&CON) in collaboration with the Institute of Mathematical Sciences (ICMAT) and the Basque Centre of Applied Mathematics (BCAM) aimed at promoting scientific or business careers among female students in undergraduate or master's programs in STEM fields (science, technology, engineering, and mathematics). It also seeks to enhance the careers of researchers who participate as mentors.

Our commission has participated since the 2023 call.

### **4. International Day of Women Mathematicians (2023)**

To celebrate this day, the Women and Mathematics Commission designed an activity aimed at children between the ages of 8 and 14, intended to be

carried out in a classroom session, with the goal of raising awareness and encouraging professions related to mathematics.

The activity is available at:

[https://iseazy.com/dl/f98928be7f2d417e898256012199bfe4#/slide/o\\_NEW\\_L20d](https://iseazy.com/dl/f98928be7f2d417e898256012199bfe4#/slide/o_NEW_L20d)

And in our YouTube channel:

[https://www.youtube.com/watch?v=ixvV0V6RhBw&ab\\_channel=Comisi%C3%B3nMujeresyMatem%C3%A1ticasRSME](https://www.youtube.com/watch?v=ixvV0V6RhBw&ab_channel=Comisi%C3%B3nMujeresyMatem%C3%A1ticasRSME)

## 5. Hidden Figures: International Day of Women Mathematicians (2024)

**Date:** May 12, 2024

**Location:** In our Youtube channel

**Description:** The Women and Mathematics Commission of the RSME has organized an event to celebrate International Women in Mathematics Day on May 12. Inspired by the 2016 film Hidden Figures, which tells the true story of three women who worked at NASA, this event will highlight and honor the contributions of women mathematicians throughout history.



Professor Raquel Villacampa (University of Zaragoza) presented the work of María Andresa Casamayor, author of Tyrocinio Aritmético, the first scientific manual written by a woman still preserved in Spain.

Professor Isabel Cordero Carrión (University of Valencia) focused on Yvonne Choquet-Bruhat, a French mathematician and physicist who is currently 100 years old. She was the first woman elected to the French Academy of Sciences (1979) and has published over 200 scientific articles, with a significant impact on mathematics and physics, particularly in the fields of relativity theory and relativistic hydrodynamics.

- 6. International Day of Women and Girls in Science (2023):** Classroom activity for children between the ages of 8 and 14 to raise awareness of various women scientists throughout history.

With this activity, we will introduce some of the scientists from the past (Hypatia, Ada Lovelace, Marie Curie, Rosalind Franklin, and Hedy Lamarr) alongside five Spanish scientists from the present (Isabel Fernández, Clara Grima, M<sup>a</sup> José Jiménez, Adela Muñoz, and M<sup>a</sup> Carmen Romero). The activity revolves around the play Científicas: pasado, presente y futuro (Scientists: Past, Present, and Future) by the University of Seville, created by Paco Vega and performed by the five aforementioned scientists. The play is aimed at children between the ages of 8 and 14 and its goal is to highlight the importance of science, encourage scientific careers, and visualize the role of women in science.

**Link to the activity:** [https://www.rsme.es/wp-content/uploads/2023/02/11F\\_ComisionMyM.pdf](https://www.rsme.es/wp-content/uploads/2023/02/11F_ComisionMyM.pdf)

- 7. International Day of Women and Girls in Science (2024):** Classroom activity for 5th and 6th Grade Students to Celebrate February 11th, International Day of Women and Girls in Science

The objective of this activity is to introduce our younger students to the contributions made by women in science through their inventions and to reflect, at the same time, on the visibility of female scientists in our society.



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## Articles in press

- 1) Interview in “El País” newspaper article: Female university students are dropping out of the Mathematics degree now that there is full employment. Why?

Link: <https://elpais.com/educacion/2022-06-15/las-universitarias-desertan-del-grado-de-matematicas-ahora-que-tiene-pleno-empleo-por-que.html>

- 2) Interview with Laura Saavedra in the Royal Spanish Mathematical Society (RSME) journal "Boletín de la RSME".

Link: <https://www.rsme.es/2022/05/laura-saavedra-presidenta-de-la-comision-mym-de-la-rsme-hay-que-dar-visibility-a-los-distintos-tipos-de-mujeres-que-hacemos-matematicas/>

- 3) We write an article periodically (about every month and a half) for the RSME bulletin on women and mathematics. Some of them were:

- i) Interview of the Women and Mathematics Committee with Gabriela Araujo, President of the Mexican Mathematical Society.

Link: <https://www.rsme.es/2022/07/entrevista-de-la-comision-de-mujeres-y-matematicas-a-gabriela-araujo-presidenta-de-la-sociedad-matematica-mexicana/>

- ii) Report: Piscopia, a support network for students and researchers in Mathematics.

We interviewed two members of Piscopia: Gemma Crowe, a doctoral student at Heriot Watt University who has been part of Piscopia in recent years, and Rosie Evans, a doctoral student at the University of Birmingham and current co-leader of the initiative. First, Gemma told us about the beginnings of Piscopia and what it consists of, and then Rosie spoke to us about their future plans and their expectations to expand this initiative worldwide.

Link: <https://www.rsme.es/wp-content/uploads/2024/02/Boletin-836.pdf> (Spanish)

<https://piscopia.co.uk/blog-feed/> (English)

### iii) Interview with Professor Raquel Villacampa.

We interviewed Raquel Villacampa on the occasion of her Third Millennium Award for Outreach in Aragón in 2022 and the Prism of Outreach for Best Singular Project awarded by Prismas Casa de las Ciencias for Outreach in 2023.

**Link:** <https://www.rsme.es/2024/04/comision-de-mujeres-y-matematicas-entrevista-con-la-profesora-raquel-villacampa>

### iv) Interview with Silvia Rueda Pascual, Engineer and PhD in Computer Science, mother, and director of the Women and Science Unit at the Ministry of Science.

The need to promote equality in science has proven to be one of the greatest challenges of the 21st century, as despite the higher percentage of women compared to men who choose to pursue a university degree, the number of women opting for a career in the STEM field remains very low, as does the number of those who decide to continue in academia. To better understand this situation and how it is addressed by institutions, we spoke with Silvia Rueda.

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#### Contact

#### Social media:

@mymRSME (X)

[https://www.facebook.com/groups/mymRSME/?locale=es\\_LA](https://www.facebook.com/groups/mymRSME/?locale=es_LA),

#### Webpage:

<https://www.rsme.es/la-sociedad/organizacion-interna/comisiones-comites-y-grupos/comision-de-mujeres-y-matematicas/>

#### Acknowledgments

The Commission expresses gratitude to all members, collaborators, and partner institutions who contributed to our activities. Special thanks to the **RSME** for their continued support and commitment to gender equality in mathematics.