PRESS RELEASE

9th ECM: 15th TO 19th OF JULY

Sevilla, European capital of mathematics

From left to right: Juan González-Meneses, Antonio Posadas, Álvaro Pimentel, Julián Martínez, Lorena Garrido, Jan Philip Solovej and Isabel Fernández-Delgado.

- **The 9th European Congress of Mathematic brings together the principal exponents of the subject matter, breaking previous records in both participants and speakers, with a grand total of 1.400 attendees.**

- **Called by the European Mathematical Society, it has been mainly organised by Universidad de Sevilla, with support from many Spanish institutions.**

- **During the opening ceremony the European Mathematical Society has granted 14 prizes, recognizing the most illustrious figures from the international mathematical landscape.**

****

PICTURES of the EVENT and of PRIZE WINNERS

POSSIBILITY TO OFFER INTERVIEWS

****

Seville, 15th July 2024. The 9th European Congress of Mathematics (ECM) will be held this week in Seville, from today till Friday. It's considered the second most important in the world in this subject. The meeting, which takes place every four years

in an European city, breaks the historical record for the number of experts attending (almost 1,400 from all over the world) and the number of papers and symposia. During these days there will be 10 plenary lectures, two special lectures, 64 mini-symposia, 270 thematic communications, as well as invited papers, workshops and a cultural agenda that includes four exhibitions with mathematics as a common thread.

The **opening ceremony**, which took place this morning at the Teatro de la Maestranza in Seville, was attended by the president of the European Mathematical Society (EMS), Jan Philip Solovej; the president of the Organising Committee, Juan González-Meneses, from the University of Seville; and the vice-president, Isabel Fernández-Delgado; as well as the other members of the committee. Among the authorities in attendance were Lorena Garrido, Vice-Minister of the Andalusian Regional Government's Department of University, Research and Innovation; Antonio Posadas Chinchilla, Secretary General for Research and Innovation; Julián Martínez Fernández Fernández, Vice-Rector for Research at the University of Seville; Julián Martínez Fernández, Third Deputy Mayor of Seville; and the Vice-Chancellor of the University of Seville, the Third Deputy Mayor of Seville and the Vice-Chancellor of the University of Seville; the Third Deputy Mayor of Seville City Council and Delegate of the Cartuja, Innovative Parks, Employment, Economy, Commerce and Consumer Affairs Area, Álvaro Pimentel; and the presidents of the EMS Awards juries, Professors Pavel Exner, Peregrina Quintela Estévez, Karine Chemla and Patrick Farrell.

In words of the president of the European Mathematical Society (EMS), Jan Philip Solovej, "The high level of the presentations and events that will take place throughout the week is on a par with the prizes being awarded today**, the most important in mathematics at an international level, second only to the Fields Medals".**

On his side, the president of the 9EMC Organizing Committee, Juan González-Meneses, from the University of Seville, emphasized "the great involvement of the Spanish mathematical community and, in particular, of all the universities of Almeria, Malaga and Cadiz, as well as Granada and Seville, in the organization of the Congress".

Isabel Fernández Delgado, vice-president of the Organising Committee, pointed out that "In front of this building there is a replica of the Nao Victoria, the ship that left the port of Seville in the 16th century to make the first circumnavigation of the Earth. In the same way that this ship opened new pathways, **we hope that new connections and significant advances will emerge from this Congress"**.

The Deputy Minister of University, Research and Innovation of the Junta de Andalucía, Lorena Garrido, took the opportunity to emphasize that "We have to highlight that **Mathematics is one of the most demanded undergraduate programs that Andalusian universities offer** (...) It shows us the importance and evolution of this area of knowledge and its high employability".

Likewise, the Vice-Rector for Research at the University of Seville, Julián Martínez Fernández, mentioned that "the fact that **Seville is hosting this international congress for the first time is due to the high quality of its scientific publications**, which we hope will soon be recognised with the seal of excellence".

The Third Deputy Mayor of Seville City Council and Delegate of the Cartuja Area, Innovative Parks, Employment, Economy, Commerce and Consumer Affairs, Álvaro Pimentel, reminded the attendees that "Seville aspires to be, during this week, the best setting to welcome you and to stimulate the dissemination of a science that is present

beyond the walls of universities and research centres. **History, architecture, technology and craftsmanship are also mathematics**".

Event to award 14 prizes to leading mathematicians

Award winners' family photo, together with the jury and the Congress organisers.

The most awaited part of the day was the awarding of the 10 prizes of the European Mathematical Society, and four other special prizes, which are the most important in Europe, and the second most important in the world, after the prestigious Fields Medals of international recognition.

Among the special awards, **Fabien Casenave**, a researcher at French technology multinational Safran, won the **Felix Klein Prize**, awarded to mathematicians under the age of 38 whose research helps solve industrial problems. Casenave develops Artificial Intelligence techniques to improve simulations of physical processes.

The **Paul Lévy Prize in Probability Theory** has been awarded to **Jeremy Quastel**, professor at the University of Toronto, one of the world's leading experts in probability theory, which he uses to understand the large-scale behaviour of interacting many-particle systems. Stochastic equations like KPZ are a challenge for mathematicians. Quastel and his collaborators were the first to find an exact solution to this equation.

The **Otto Neugebauer Prize** was awarded to **Reinhard Siegmund-Schultze** of the University of Adger (Kristiansand, Norway). He is a German historian of mathematics, especially known for his historical research on the emigration of European mathematicians during Nazism.

Finally, the **Cornelius Lanczos Prize**, which is awarded to a mathematician or scientist for the development of outstanding mathematical software, has recognised the **MUMPS software library**, developed by researchers Patrick Amestoy, Jean-Yves L'Excellent and Chiara Puglisi. MUMPs is a software library for solving systems of linear equations quickly and accurately, based on twenty years of research.

For its part, the EMS is awarding **a further ten prizes to 10 young mathematicians under the age of 35**, in recognition of their outstanding contributions to mathematics. The winners, who must be of European nationality or have carried out their work in Europe, were:

- **Maria Colombo** (EPFL), was a gold medalist at the 2006 International Mathematical Olympiad. Within mathematical analysis, Colombo is an exceptionally prolific and versatile mathematician. A recurring theme in her work is the study of irregular solutions to nonlinear partial differential equations, describing physical processes and geometrical problems.

- **Cristiana de Filippis** (University of Parma, Italy) Specialist in calculus of variations and elliptic partial differential equations (describing the equilibrium states of classical physical systems, such as the electric field created by a distribution of electric charges, or the temperature distribution in a material).

- **Jessica Fintzen** (University of Bonn). German mathematician who studied at the University of Bremen and did her thesis at Harvard University. She is currently a professor at the University of Bonn. She received the prize for her groundbreaking work in the theory of p-adic group representations, in particular for her spectacular proof that Yu's construction of supercuspidal representations is exhaustive.

- **Nina Holden** (New York University, Courant Institute, USA). She works in mathematical physics, complex analysis and probability, in a recent and very active area connected with statistical physics and quantum field theory. He won a Maryam Mirzakhani New Frontiers Prize in 2021.

- **Tom Hutchcroft** (California Institute of Technology, USA). Britishman who is currently a Professor at the California Institute of Technology, Pasadena, for his revolutionary contributions to probability theory and geometric group theory, in particular to the theory of percolation in general graphs, combining geometric, operator theory, group theory and functional analysis techniques.

- **Jacek Jendrej** (Université Sorbonne Paris Nord, France). He studies nonlinear partial differential equations that describe the propagation and interaction of waves. These equations have particularly interesting solutions, which are observed in many natural phenomena: they are called solitons or solitary waves.

- **Adam M. Kanigowski** (University of Maryland, USA). A professor at the University of Maryland in the United States, he is an expert in dynamical systems, an area of mathematics that studies the evolution over time of all kinds of processes, and more generally, the concepts of change and transformation.

- **Frederick Manners** (University of California San Diego, USA). Manners' scientific interests are varied and include number theory, mathematical analysis and ergodic theory, although his main speciality is additive combinatorics.

- **Richard Montgomery** (University of Warwick, UK). He specialises in combinatorics: the study of discrete structures, such as graphs (an abstraction of objects consisting of interconnected elements, such as an underground network or neurons and axons in the brain). More specifically, he is interested in

so-called extremal combinatorics, which seeks to understand how large these structures have to be for certain properties to emerge.

- **Danylo Radchenko** (CNRS, University of Lille). Ukrainian gold medalist at the International Mathematical Olympiads in 2007. The jury awarded him the prize for his construction of optimal spherical designs and his pioneering contribution to the new field of Fourier interpolation, as well as for his contributions to the theory of polylogarithms.

Andalusian Mathematics, of high international acclaim

This Congress is held under the auspices of the **European Mathematical Society (EMS)** and has landed in Seville thanks to the candidacy presented by the University of Seville (US). The president of the Organising Committee, Professor Juan González-Meneses, defended the Sevillian project, which was finally chosen instead of the also very strong candidacy presented by Lisbon. The 9ECM Seville 2024 has the experience of the Institute of Mathematics of the University of Seville (IMUS) and the Institute of Mathematics of the University of Granada (IEMATH-GR), both nuclei of the Andalusian Institute of Mathematics (IAMAT).

The scientific event has its main venue at the Escuela Técnica Superior de Ingeniería (ETSI, *Engineering Technical School*), of the University of Seville, which hosts the main sessions, with the Convention Centre of the Barceló Hotel also being part of the venue. In addition, **satellite events are being held throughout Andalusia** such as the 2024 European Mathematical Society (EMS) Council, held in Granada just last weekend.

The University of Seville and, in general, the public universities of Andalusia, do outstanding research work in Mathematics of first international level, as all research rankings show. Organisers hope that the holding of this congress at the University of Seville will consolidate the international recognition of the research carried out at the institution and at the same time will bring the work carried out there even closer to society, which is increasingly convinced of the important role played by Mathematics in their lives and well-being.

In addition, 100 mathematics students are volunteering for the event, and a total of 120 scholarships for mathematicians from developing countries have been awarded as part of the international cooperation programme.

A program with diversity of themes

The line-up of mathematicians invited to give talks at the event includes some of the most prestigious mathematicians in the world, and they will address a wide range of topics. Among the most eagerly awaited speakers are **Fabio Tonelli**, from the Technical University of Vienna, who in recent works has studied the equation known as KPZ (for Kardar, Parisi and Zhang), which models processes of growth and aggregation, such as those of a tumour, a city or the way in which a crystal is formed by adding atoms from its surroundings. **Annalisa Buffa**, professor at the Ecole Polytechnique Federale de Lausanne and an expert in numerical analysis with industrial applications, will also be speaking about mathematical simulations and algorithms for testing the machines of the industry of the future. The Israeli **Avi Wigderson**, professor at the Institute for Advanced Study at Princeton, an expert in the theory of computation, algorithm design, cryptography and quantum computing and communication, will give the special 'Abel Lecture'. **Etienne Ghys**, mathematician and professor at the Ecole Normale Supérieure of the University of Lyon and emeritus

director of research at the French National Centre for Scientific Research (CNRS), will be giving a lecture on the mathematical formula for scoring a goal and other informative skills. And, from the national scene, and more specifically from the University of Seville, Professor **José López-Barneo**, founder of the Institute of Biomedicine of Seville, will give a talk on the search for a neuroprotective therapy for Parkinson's disease, and **Montserrat Vilà**, from the Doñana Biological Station of the Spanish National Research Council (CSIC), who will give a talk on "Biotic globalisation by invasive species".

Agenda cultural; cuatro exposiciones paralelas

As part of the cultural offer associated with the 9ECM, four exhibitions with mathematics as a backdrop will also be on display during these days. One of them, **"Maps. Cartographic heritage in Seville from the 15th to the 18th centuries"**, which is located at the Cajasol Foundation in Seville; this is a selected collection of maps and books with documents from the period from the Late Middle Ages and the early Renaissance up until the Enlightenment, from the Archive of the Indies, the Columbine Library and the University of Seville. The other three will be on display at the main venue, the Technical School of Engineers of Seville: **"A Geometric Walk Through the Alhambra"**, which explains part of the mathematical secrets present in the Alhambra in Granada; **"Women in Mathematics From Around the World. A gallery of portraits"**, which presents 34 extensive profiles of women mathematicians from around the world, through photographs, texts and videos and **"Knots"**, aimed at a more general public, has ten three-dimensional models of mathematical knots specially selected for their peculiarities, symmetries and beauty, which guide the visitor through the fascinating world of Knot Theory.

MORE INFORMATION:

9ECM's website: https://ecm2024sevilla.com and program: https://acortar.link/qgaazz

PICTURES OF THE EVENT y de los PRIZE WINNERS

PRESS CONTACTS:

E-mail: 9ECM@divulga.es