**His Majesty the King of Spain at the inauguration of ICIAM2019**

# "Spain is the world's seventh largest mathematical research power by number of citations"

- **Tomas Chacón, President of the Organizing Committee: "We have to take on the challenge of shaping the world through mathematics".**
- **Alfredo Bermúdez de Castro, guest speaker: "The challenge of energy transition, essential in the fight against climate change, can be tackled with mathematical modelling".**
- **Alfio Quarteroni, president of the Scientific Committee: "We can minimize the time that heart patients spend in the operating room and explore different scenarios to suggest what to do".**

**Valencia, 15th of July, 2019.** "Mathematics is today one of Spain's greatest assets in science and innovation. This discipline produces high-quality basic science, but it will also serve more and more every day as a vector for technological development and innovation regarding major challenges in basic areas such as health, energy supply, biodiversity and environmental sustainability". With these words, His Majesty the King Felipe VI of Spain inaugurated the ninth edition of the International Congress of Industrial and Applied Mathematics (ICIAM2019) in Valencia this morning, which brings together almost 4,000 mathematicians who have travelled from more than a hundred countries this week to the city.

Don Felipe has highlighted the growing work of Spain in the contribution to European achievements in science and innovation, especially in the field of mathematics. "Spanish mathematics is in good health as well as being highly valued, as shown by the fact that our country is the seventh world power in mathematical research by number of citations", he said. As an example of this, he has mentioned Spanish leading centres such as the Institute of Mathematical Sciences (ICMAT), the Basque Centre for Applied Mathematics (BCAM) and the Barcelona Graduate School of Mathematics (BGSMath).

In addition, His Majesty has stressed Valencia's commitment in "promoting technological progress, environmental development and marine conservation", which is why "it is not surprising that Valencia has won the title of 'City of Science and Innovation'," he added. A commitment that is also manifested in the annual presentation of the Rei Jaume I Awards which take place in the city.

**The beginning of the greatest appointment with applied mathematics**

The inauguration of the event, which takes place every four years and this being the first time it is held in Spain, was also attended by the Minister of Science, Innovation and University in office, **Pedro Duque**; the President of the Generalitat Valenciana, **Ximo Puig**; and the Mayor of Valencia, **Joan Ribó**, amongst other authorities.

**Maria J. Esteban**, research director at the French CNRS and president of the International Council for Industrial and Applied Mathematics (ICIAM), remarked that "research in mathematics is a very good idea because the economic return is enormous, also in terms of job creation." On another note, **Tomas Chacón**, president of the Organising Committee of ICIAM2019, pointed out that the main challenge for Spanish science is to transfer research in science and technology to the productive sector, and encouraged those attending to "take on the challenge of shaping the world through mathematics".

The president of the scientific committee of ICIAM2019, **Alfio Quarteroni,** explained that now that we live in a changing market which requires workers who adapt to it continuously – instead of requiring specialization - ,"mathematicians are the most prepared people to be flexible, so there is no industry that can not benefit from them".

**Infinite applications of mathematics**

Throughout the five days of the congress (from today, Monday 15, until July 19), ICIAM2019's assistants will be able to attend 27 conferences by speakers regarding applications of mathematics in different and varied sectors.

"The aerospace industry benefits greatly from mathematics. There are also models for simulating tsunamis, earthquakes and hurricanes, which in turn can be used to better understand climate change; for example, how rising sea levels will affect coastlines", said **Marsha Berger**, a researcher in the Department of Computer Science at New York University's Courant Institute

of Mathematical Sciences, who will give a presentation on "Progress in Modelling Tsunamis Generated by Asteroids" on Wednesday 17th.

Related to climate change is the problem of energy storage. "The challenge of energy transition is vital, and the management of integrated energy networks is something that can clearly be tackled with mathematical modelling. There is a great deal of interest from European operators in being able to manage it in the best possible way", explained **Alfredo Bermúdez de Castro**, professor at the University of Santiago de Compostela, who will speak on the subject on Wednesday 17th in his talk "Some case studies on industrial and environmental mathematics".

One of the most relevant sectors of applied mathematics is medicine, which provides a distinctive approach because, as Quarteroni explained, "it allows non-invasive theoretical studies for patients thanks to the large amount of clinical data available". The mathematician is the principal researcher of the European project iHEART to simulate the human heart, and he has detailed that "with mathematics we can minimize the time that a patient spends in the operating room and explore different scenarios to suggest what the doctor do, for example, in heart diseases, which are responsible for 45% of deaths in Europe". Understanding the brain and the development of diseases such as Alzheimer's and Parkinson's are other challenges on the mathematician's table.

**ICIAM Awards Presented**

During the opening ceremony, His Majesty the King presented the five awards of the congress to the respective laureates:

- **ICIAM Collatz Award**, for scientists under 42 years old, which was received **Siddhartha Mishra**, from the Federal Polytechnic School of Zurich (Switzerland).
- **ICIAM Lagrange Award**, for authors of exceptional contributions throughout their career, awarded to **George Papanicolaou**, from Stanford University (USA).
- **ICIAM Maxwell Award**, for mathematicians who have demonstrated originality in the field of applied mathematics, whose winner is **Claude Bardos**, of the Paris Denis Diderot University (France).
- **ICIAM Pioneer Award**, for pioneering developments in mathematical methods applied to a new field or an industrial problem, awarded to **Yvon Maday**, of the Sorbonne University (France).

- **ICIAM Su Buchin Award**, for promoters of applied mathematics in developing countries, which recognize the work of **Giulia Di Nunno**, from the University of Oslo (Norway).

The celebration of the International **Congress of Industrial and Applied Mathematics 2019** in Valencia has been possible thanks to the sponsorship of many institutions, amongst them the **Ministry of Science, Innovation and Universities**; the **Foundation of the Valencian Community for the Promotion of Higher Studies** (FFES); the **Diputació de València**; the **City Council of Valencia**; the **University of Valencia**; and **Banco Santander**.

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https://iciam2019.org/

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