ICIAM 2019

VALENCIA

9th International Congress on Industrial and Applied Mathematics

July 15-19
Valencia · Spain

PROGRAM

ORGANIZED BY

Asociación ICIAM 2019 - Valencia

Sociedad Española de Matemática Aplicada

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> Paul M. Wythes '55 Professor of Engineering and Finance, Bendheim Center for Finance, ORFE, Princeton University
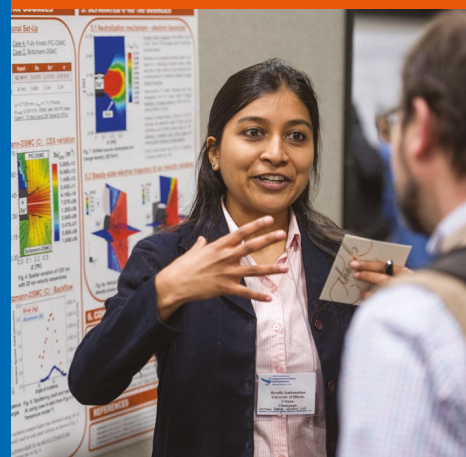
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Booth location: Faculty of Psychology Stands 1 & 2

siam | Society for Industrial and Applied Mathematics

9th International
Congress on
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Mathematics

ICIAM
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Table of Contents

Welcome to the ICIAM 2019 congress!

The ICIAM congresses are the largest existing events for the international community of applied and industrial mathematicians, and it is a wonderful showcase for the very diverse span of activities of this very active community, and its interactions with the society.

These congresses take place every four years, in different countries, and now, after the two last ones having taken place in Vancouver (2011) and Beijing (2015), the congress arrives to Valencia (Spain).

The 2019 ICIAM prizes will be awarded during the opening ceremony. The winners will receive their certificates and prize awards followed by a brief introduction of their work. Later during the congress, the prize winners will present their own research.

In addition to the prize winners' talks, there will be 27 invited lectures, which have been selected by the Scientific Program Committee. This committee, chaired by professor Alfio Quarteroni, has worked hard to put together a wonderful array of applied mathematicians who work in different areas showcasing the diversity of the topics represented in the ICIAM community. Another great moment this week will be the Olga Taussky-Todd (OTT) lecture, given this year by professor Françoise Tisseur.

The public lecture will be given by professor Victor M. Pérez-García, a Spanish mathematician who works on the applications of mathematics to health, specifically to oncology seeking to find optimal treatments. In addition to these talks, there will be many interesting presentations in the mini-symposia and also in the embedded SEMA (Sociedad española de matemática aplicada) and SIAM congresses.

The congress organizers have worked very hard to assemble the program together, to make the congress facilities as welcoming and nice as possible, and to create very interesting social events in wonderful places, like the Palau de la Música (opening ceremony) or the Opera house (public lecture). It is remarkable that the organizing team includes mathematicians not only from Valencia, but from the whole of Spain. This congress is an effort by the whole community of Spanish applied mathematicians, coordinated by SEMA. ICIAM is indebted to the organizing team and to SEMA for their superb work.

In concluding, let us point out that an Industry Day is going to be part of the congress. Wednesday July 17th will be devoted to conferences and mini-symposia concerned with industrial applications and collaborations.

I am sure that this congress will be a great success and that all the participants will keep a wonderful memory of their stay in Valencia!
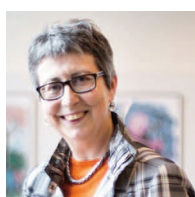
Maria J. Esteban
ICIAM President

Welcome to ICIAM2019-Valencia

On behalf of the Spanish Society for Applied Mathematics (SeMA) and the Organizing Committee of the congress, we are pleased to warmly welcome you to Valencia and ICIAM 2019 Congress. ICIAM Congresses are the main tool of ICIAM to achieve its core objective, namely to 'advance the applications of mathematics in all parts of the world'. We are extremely pleased to be able to contribute to this goal.

As many of you already know, ICIAM conferences are truly special events. At ICIAM 2019 Valencia you may choose among a total of 34 invited talks, including 27 invited speakers, 5 ICIAM prize winners' lectures, the Olga Taussky-Todd lecture, and the Public Lecture. There will also be nearly 300 thematic minisymposia, 25 industrial minisymposia, 800 contributed talks and 250 posters covering virtually all aspects of applications of mathematics to science, engineering and industry. As an additional effort to highlight the innovation potential of using advanced mathematical tools in the industrial sector, we have scheduled an Industry Day on Wednesday, 17th of July, including 14 talks by delegates of technology companies. The purpose is to promote the exchange of experiences and to open new channels of communication between researchers and potential users of high-level mathematical technology. There will be over 20 exhibitors: scientific publishers and high technology companies, that present their latest products, as well as research institutions that feature their achievements and present recruitment opportunities.

This is complemented by a satellite program split over the cities of Bilbao, A Coruña, Málaga, Santiago de Compostela, Sevilla and Zaragoza: each venue will host several satellite activities, which are part of a Satellite Meetings program that includes over 30 events.

The celebration of ICIAM 2019-Valencia has been made possible by the work of a large and enthusiastic team and the support of many organizations and sponsors. We express our sincere gratitude to the Advising Committee for guidance when preparing our candidacy back in 2013, and to Barbara Keyfitz and Maria Esteban for the continuous advice as ICIAM Presidents. Special thanks go to the Scientific Program Committee, chaired by Alfio Quarteroni, for selecting invited speakers, and to the members of the Thematic Committees, for their unabated attention to the many organizational details of such a complex event. The organizers of all ICIAM 2019 satellite and embedded activities also deserve a special mention, as well as the organizers of the many events where the promotional material of ICIAM 2019 was displayed. Last but not least, we would like to thank the enthusiastic crowd of young volunteers working at ICIAM 2019 Valencia. We are sure that this congress will have a decisive impact on their future careers.

Private and public sponsors of the event are gratefully acknowledged: Universitat de València, Gobierno de España, Generalitat Valenciana, Ajuntament de València, Diputació de València, Banco Santander and the many research centers, institutes and mathematics departments in the Spanish educational system who have contributed to support the Financial Aid Program of the congress. The latter was carefully designed to foster the participation of young researchers as well as mathematicians from developing countries.

We expect nearly 4000 participants from all over the world, an unprecedented number which clearly indicates that ICIAM congresses have become more and more attractive with each new edition. We are certainly indebted to the entire mathematical community in Spain, for their commitment toward the success of the congress. Most importantly, we are indebted to all ICIAM 2019 participants, for making this 9th edition of the ICIAM congress a truly exceptional event.

Mathematics is silently shaping the present technological world. It not only provides a deep insight in countless processes and systems, thereby advancing scientific knowledge. It also generates added value in virtually all economic sectors. You are at a perfect time and place to learn about and explore new mathematical tools, exchange ideas and move ahead in the thrilling challenge of shaping the world with mathematics.

Tomás Chacón
ICIAM 2019 Valencia
Congress Chairman

Rosa Donat
President of the Spanish Society
for Applied Mathematics

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Theory and Practice of Deep Learning

July 20-31, 2020
Cape Town, South Africa

Application Deadline
February 1, 2020

For more information on how to apply, on past summer schools, and on Professor Gene Golub, go to:

www.siam.org/students/g2s3/

Sponsored by SIAM through an endowment from the estate of Gene Golub.
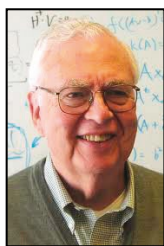
The eleventh Gene Golub SIAM Summer School will take place at the African Institute for Mathematical Sciences (AIMS) in Muizenberg, a small seaside suburb of Cape Town, South Africa.

The focus of the school will be the theory, implementation, and application of deep learning based on neural nets with many layers. Students will learn the mathematical underpinnings of deep learning using a combination of functional analysis and optimization theory. They will be introduced to applications that include computer vision, nonlinear programming, and forecasting, in addition to attending lectures by practitioners of deep learning in industry.

The summer school will include an important computing component, in which students will implement deep learning algorithms primarily using Python with TensorFlow and Keras. High performance computing resources will be provided by the AIMS South Africa supercomputing facility.

The summer school is being organized by Bubacarr Bah (AIMS South Africa and Stellenbosch University), Coralia Cartis (University of Oxford), and Kasso Okoudjou (University of Maryland, College Park).

The intended audience is graduate students, meaning anyone studying beyond a three- or four-year undergraduate degree. Applicants are expected to have done a significant amount of mathematics and some computing in their studies in order to have the required mathematical and computational background for the summer school. Ideal candidates will be working on a research project that requires the use of deep learning methods. Applicants selected to participate will pay no registration fee, will be provided local accommodations, and will have their meal expenses paid.
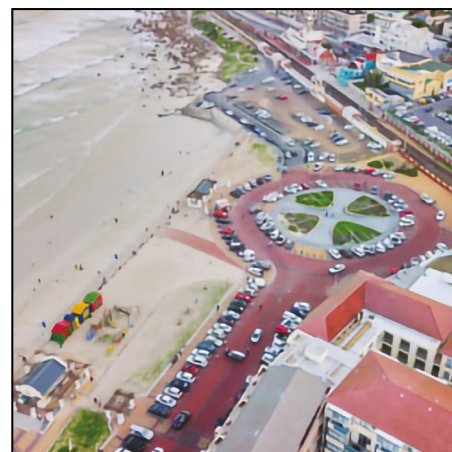
The information of each talk is encoded as a 9/10-character string, AB-CD-e-f-xx-y, meaning that the talk of TYPE "AB" will be given in BUILDING "CD", at FLOOR "e", at ROOM "f", on DATE & TIME "xx", and in the PRESENTATION ORDER "y".

The symbols are explained as follows:
Code: Type / Building / Floor / Room No. / Date & Time / Presentation order

TYPE:
- **SL** = Special Lectures
- **IL** = Invited Lectures
- **MS** = Minisymposia
- **IM** = Industrial Minisymposia
- **CP** = Contributed Papers
- **P** = Posters (**PA**: session on Monday-Tuesday; **PB** session on Wednesday; **PC** session on Thursday-Friday)

BUILDINGS:
- **A1** = Aulari I
- **A3** = Aulari III
- **A6** = Aulari VI
- **MA** = (air-conditioned) Marquee
- **ME** = Facultat de Medicina i Odontologia
- **PS** = Facultat de Psicologia
- **FT** = Facultat de Filologia, Traducció i Comunicació
- **FE**: = Facultat de Filosofia i Ciències de l'Educació
- **GH** = Facultat de Geografia i Història

FLOOR:
- **S** = Basement Level
- **0** = Ground Floor
- **1** = First Floor
- **2** = Second Floor
- **3** = Third Floor
- **4** = Fourth Floor

DATE & TIME:
- **1 =** Monday 17:00h-19:00h
- **2 =** Tuesday 11:00h-13:00h
- **3 =** Tuesday 14:30h-16:30h
- **4 =** Tuesday 17:00-19:00h
- **5 =** Wednesday 11:00-13:00h
- **6 =** Wednesday 14:30h-16:30h
- **7 =** Wednesday 17:00h-19:00h
- **8 =** Thursday 14:30h-16:30h
- **9 =** Friday 11:00h-13:00h
- **10 =** Friday 14:30h-16:30h

Examples:

MS-GH-1-1-2-3: Minisymposium, GH-Building, 1st floor, Room 1, Tuesday 11:00h-13:00h, Presentation order No. 3

CP-A3-S-C2-9-1: Contributed Paper, A3-Building, Basement, Room C2, Friday 11:00h-13:00h, Presentation order No. 1

- **01.** Applied Mathematics for Industry and Engineering
- **02.** Astronomy, Astrophysics and Geophysics
- **03.** Biology, Medicine and other Natural Sciences
- **04.** Chemistry, Chemical Engineering
- **05.** Computational Geometry
- **06.** Computer Science
- **07.** Control and Systems Theory
- **08.** Discrete Mathematics
- **09.** Dynamical Systems and Nonlinear Analysis
- **10.** Education
- **11.** Finance and Management Science
- **12.** Fluids Physics and Statistical Mechanics
- **13.** Information, Communication, Signals
- **14.** Linear Algebra and Geometry
- **15.** Materials Science and Solid Mechanics
- **16.** Mathematics and Computer Science
- **17.** Numerical Analysis
- **18.** Optimization and Operations Research
- **19.** Ordinary Differential Equations
- **20.** Partial Differential Equations
- **21.** Probability and Statistics
- **22.** Real and Complex Analysis
- **23.** Simulation and Modelling
- **24.** Social Science
- **25.** Other Mathematical Topics and their applications
- **26.** General

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PROGRAM AT A GLANCE ICIAM 2019

TIME: 8:00 · 8:15 · 8:30 · 8:45 · 9:00 · 9:15 · 9:30 · 9:45 · 10:00 · 10:15 · 10:30 · 10:45 · 11:00 · 11:15 · 11:30 · 11:45 · 12:00 · 12:15 · 12:30 · 12:45 · 13:00 · 13:15 · 13:30 · 13:45 · 14:00 · 14:15 · 14:30 · 14:45 · 15:00 · 15:15 · 15:30 · 15:45 · 16:00 · 16:15 · 16:30 · 16:45 · 17:00 · 17:15 · 17:30 · 17:45 · 18:00 · 18:15 · 18:30 · 18:45 · 19:00 · 19:15 · 19:30 · 19:45 · 20:00 · 20:15 · 20:30 · 20:45 · 21:00

SUNDAY JULY 14
- Valencia Conference Centre
- REGISTRATION
- WELCOME RECEPTION (18:30 h - 20:30 h)

MONDAY JULY 15
- Universitat de València — REGISTRATION
- Valencia Conference Centre — REGISTRATION
- REGISTRATION OPENS
- Opening Ceremony & AWARDS (10:00h - 11:15h)
- COFFEE BREAK
- Laudations for ICIAM prize winners (11:45h - 12:20h)
- Olga Taussky-Todd LECTURE (12:30h - 13:15h)
- LUNCH BREAK (13:15h - 15:00h)
- ICIAM PIONEER PRIZE LECTURE (15:00 h - 15:45h)
- ICIAM COLLATZ PRIZE LECTURE (15:45 h - 16:30h)
- COFFEE BREAK & POSTER SESSION (16:30h - 17:00h)
- Scientific Sessions (17:00h - 19:00h)
- Peter Henrici LECTURE (19:15h - 20:00h)

TUESDAY JULY 16
- Universitat de València — REGISTRATION
- REGISTRATION OPENS
- INVITED LECTURES (3 in Parallel 08:30h - 09:15h)
- INVITED LECTURES (3 in Parallel 09:30h - 10:15h)
- COFFEE BREAK & POSTER SESSION (10:30h - 11:00h)
- Scientific Sessions (11:00h - 13:00h)
- LUNCH BREAK (13:00-14:30)
- Scientific Sessions (14:30h - 16:30h)
- COFFEE BREAK & POSTER SESSION (16:30h - 17:00h)
- Scientific Sessions (17:00h - 19:00h)
- John von Neumann LECTURE (19:15h - 20:00h)

WEDNESDAY JULY 17 — INDUSTRY DAY
- Universitat de València — REGISTRATION
- REGISTRATION OPENS
- INVITED LECTURES (3 in Parallel 08:30h - 09:15h)
- INVITED LECTURES (3 in Parallel 09:30h - 10:15h)
- COFFEE BREAK & POSTER SESSION (10:30h - 11:00h)
- Scientific Sessions (11:00h - 13:00h)
- LUNCH BREAK (13:00-14:30)
- Scientific Sessions (14:30h - 16:30h)
- COFFEE BREAK & POSTER SESSION (16:30h - 17:00h)
- Scientific Sessions (17:00h - 19:00h)
- Sonia Kovalevsky LECTURE (19:15:20:00h)

THURSDAY JULY 18
- Palau de les Arts
- Universitat de València — REGISTRATION
- REGISTRATION OPENS
- INVITED LECTURES (3 in Parallel 08:30h - 09:15h)
- INVITED LECTURES (3 in Parallel 09:30h - 10:15h)
- COFFEE BREAK & POSTER SESSION (10:30h - 11:00h)
- INVITED LECTURES (3 in Parallel 11:00h - 11:45h)
- ICIAM LAGRANGE PRIZE LECTURE (12:00h - 12:45h)
- LUNCH BREAK (13:00-14:30)
- Scientific Sessions (14:30h - 16:30h)
- COFFEE BREAK & POSTER SESSION (16:30h - 17:00h)
- ICIAM SU BUCHIN PRIZE LECTURE (17:00h - 17:45h)
- ICIAM MAXWELL PRIZE LECTURE (17:45h - 18:30h)
- Public Lecture (19:45h - 20:45h)

FRIDAY JULY 19
- Universitat de València — REGISTRATION
- REGISTRATION OPENS
- INVITED LECTURES (3 in Parallel 08:30h - 09:15h)
- INVITED LECTURES (3 in Parallel 09:30h - 10:15h)
- COFFEE BREAK & POSTER SESSION (10:30h - 11:00h)
- Scientific Sessions (11:00h - 13:00h)
- LUNCH BREAK (13:00-14:30)
- Scientific Sessions (14:30h - 16:30h)
- Closing Ceremony (16:45h - 17:15h)

Venue

Blasco Ibáñez Campus of the Universitat de València
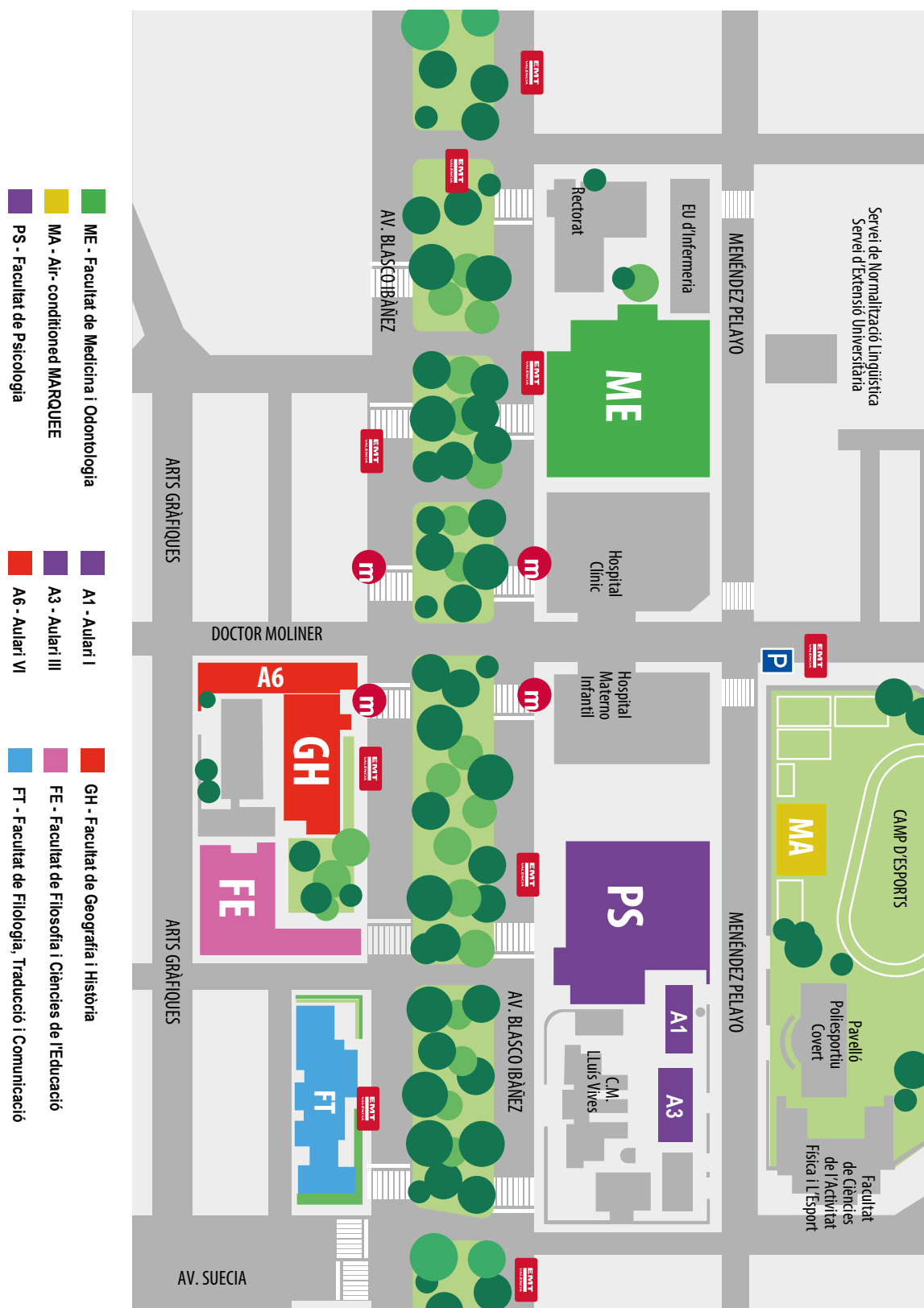
MONDAY, JULY 15

09:00 - 10:15, OPENING CEREMONY, Valencia Conference Centre

10:15-11:30, LAUDATIONS FOR PRIZE WINNERS, Valencia Conference Centre

Chair person: Maria J. Esteban

- ICIAM Pioneer Prize: **YVON MADAY,** Sorbonne University, Paris, France
  Laudation: Alfio Quarteroni

- ICIAM Collatz Prize: **SIDDHARTHA MISHRA**, ETH Zürich, Switzerland
  Laudation: Zdenek Strakos

- ICIAM Lagrange Prize: **GEORGE PAPANICOLAOU,** Stanford University, EEUU
  Laudation: Margaret Wright

- ICIAM Su Buchin Prize: **GIULIA DI NUNNO**, University of Oslo, Norway
  Laudation: Ya-xiang Yuan

- ICIAM Maxwell Prize: **CLAUDE BARDOS**, Université Paris Denis Diderot, France
  Laudation: Alex Mielke

SeMA
Sociedad Española de Matemática Aplicada

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- Have your say and vote at the annual Assembly.
- Benefit from a series of services offered by the Society
- Benefit from the collaboration agreements with sister societies.

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ICIAM Pioneer Prize: YVON MADAY, Sorbonne University, Paris, France

Monday, July 15, 15:00h - 15:45h, FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Lisa Fauci

Title: Coupling of reduced mathematical models and data for assimilation and the development of digital twins

ICIAM Collatz Prize: SIDDHARTHA MISHRA, ETH Zürich, Switzerland

Monday, July 15, 15:45h - 16:30h, FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Heike Fassbender

Title: On the convergence of numerical schemes for hyperbolic systems of conservation laws

ICIAM Lagrange Prize: GEORGE PAPANICOLAOU, Stanford University, EEUU

Thursday, July 18, 12:00h - 12:45h, FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Luca Formaggia

Title: Data structures in imaging

ICIAM Su Buchin Prize: GIULIA DI NUNNO, University of Oslo, Norway

Thursday, July 18, 17:00h - 17:45h, FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Pingwen Zhang

Title: Time change in modelling, stochastic calculus and control

ICIAM Maxwell Prize: CLAUDE BARDOS, Université Paris Denis Diderot, France

Thursday, July 18, 17:45h - 18:30h, FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Edriss Titi

Title: From the d'Alembert paradox to the 1984 Kato criteria via the 1941 1/3 Kolmogorov law and the 1949 Onsager conjecture

INVITED LECTURES

Tuesday, July 16, Universitat de València, 08:30h - 09:15h

IL01: James Sethian, University of California, Berkeley, California, USA
MA - (air conditioned) Marquee

Chair Person: Maurizio Falcone

Title: Advances in Advancing Interfaces: The Mathematics of Manufacturing of Industrial Foams, Fluidic Devices, and Automobile Painting

IL02: Carlos Conca, Universidad de Chile, Santiago, Chile
ME - Aula Magna

Chair Person: Luis Vega

Title: Modeling Our Sense of Smell

IL03: Xiao-Ping Wang, Hong Kong University of Science and Technology, China
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Liliana Borcea

Title: An iterative thresholding method for topology optimization

Tuesday, July 16, Universitat de València, 9:30h – 10:15h

IL04: Donald Goldfarb, Columbia University, USA
MA - (air conditioned) Marquee

Chair Person: Qiang Du

Title: The Alternating Direction Method of Multipliers: Recent Advances and Applications

IL05: Ruo Li, Pekin University, China
ME - Aula Magna

Chair Person: Manuel J. Castro

Title: Globally hyperbolic regularization to Grad's moment system

IL06: Isabelle Gallagher, Univ. Paris Diderot (P7) and École Normale Supérieure de Paris, France
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Carlos Kenig

Title: From particle systems to the Boltzmann equation

Wednesday, July 17, Universitat de València, 8:30h – 9:15h

IL07: Alfredo Bermúdez de Castro, Univ. of Santiago de Compostela, Spain
MA - (air conditioned) Marquee

Chair Person: Wil Schilders

Title: Some case studies in environmental and industrial mathematics

IL08: Wolfgang Dahmen, University of South Carolina, USA
ME - Aula Magna

Chair Person: Gitta Kutyniok

Title: High-Dimensional Operator Equations - Error Control and Complexity

IL09: Hans de Sterck, University of Waterloo, Canada
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Mejdi Azaiez

Title: Scalable Solvers for Computational Science and Data Science: Multilevel, Nonlinearly Preconditioned, and Parallel-in-Time

Wednesday, July 17, Universitat de València, 9:30h – 10:15h

IL10: Peter Bühlmann, ETH Zurich, Switzerland
MA - (air conditioned) Marquee

Chair Person: Carlos Vázquez Cendón

Title: Statistical Robustness, Stability and Interpretability of Algorithms

IL11: Marsha J. Berger, Courant Institute, NYU, New York, USA
ME - Aula Magna

Chair Person: Leslie Greengard

Title: Progress in Modeling of Asteroid-Generated Tsunamis

IL12: Kazue Sako, Security Research Labs NEC, Japan
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Yasumasa Nishiura

Title: Cryptography and Digital Transformation

Thursday, July 18, Universitat de València, 8:30h – 9:15h

IL13: Eitan Tadmor, University of Maryland, College Park, USA
MA - (air conditioned) Marquee

Chair Person: Mari Paz Calvo

Title: Emergent behavior in collective dynamics

IL14: Omar Ghattas, Texas University, Austin, USA
ME - Aula Magna

Chair Person: Douglas Arnold

Title: Large-scale stochastic PDE-constrained optimization

IL15: Yunqing Huang, Xiangtan University, China
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Henar Herrero

Title: Recent advances in mathematical analysis and numerical simulation of invisibility cloaks with metamaterials

Thursday, July 18, Universitat de València, 9:30h – 10:15h

IL16: Thomas A. Grandine, The Boeing Company, USA
MA - (air conditioned) Marquee

Chair Person: Volker Mehrmann

Title: 21st Century Industrial Computing at Boeing

IL17: Claude Le Bris, École des Ponts & Chaussées and Inria, Paris, France
ME - Aula Magna

Chair Person: Juan Luis Vázquez

Title: Homogenization of materials with defects

IL18: Anna-Karin Tornberg, Kth Royal Institute of Technology, Stockholm, Sweden
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Ricardo Nochetto

Title: Close interactions of drops and particles in viscous flow

Thursday, July 18, Universitat de València, 11:00h – 11:45h

IL19: Kristin Lauter, Microsoft Research and University of Washington, USA
MA - (air conditioned) Marquee

Chair Person: Nick Trefethen

Title: Private AI

IL20: Hiroshi Suito, Tohoku University, Japan
ME - Aula Magna

Chair Person: Maurizio Falcone

Title: Geometrical characteristics of human anatomical structure in thoracic diseases

IL21: Panagiotis E. Souganidis, University of Chicago, USA
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: José Antonio Carrillo De La Plata

Title: Nonlinear Stochastic Partial Differential Equations

Friday, July 19, Universitat de València, 8:30h – 9:15h

IL22: Karen Wilcox, University of Texas at Austin, USA
MA - (air conditioned) Marquee

Chair Person: Peregrina Quintela

Title: Predictive data science for physical systems: From model reduction to scientific machine learning

IL23: Sylvia Serfaty, Courant Institute, New York University, USA
ME - Aula Magna

Chair Person: M. Elena Vázquez Cendón

Title: Systems of points with Coulomb interactions

IL24: Marcelo Viana, IMPA, Rio De Janeiro, Brazil
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Jesús Sanz-Serna

Title: Lyapunov exponents, from the 1960s to the 2020s

Friday, July 19, Universitat de València, 9:30h – 10:15h

IL25: Nicholas J. Higham, University of Manchester, UK
MA - (air conditioned) Marquee

Chair Person: Cleve Moler

Title: Exploiting Low Precision Arithmetic in the Solution of Linear Systems

IL26: Leah Edelstein-Keshet, University of British Columbia, Vancouver, Canada
ME - Aula Magna

Chair Person: Ami Radunskaya

Title: Pattern formation inside living cells

IL27: J. A. C. Weideman, Stellenbosch University, South Africa
FT - Saló d'Actes *Manuel Sanchis Guarner*

Chair Person: Pablo Pedregal

Title: Dynamics of Complex Singularities of Nonlinear PDEs: Analysis and Computation

OLGA TAUSSKY-TODD LECTURE: **Françoise Marie Louise Tisseur**, School of Mathematics-University of Manchester, UK

Monday, July 15, Valencia Conference Centre, 12:00h – 12:45h

Chair Person: Barbara Keyfitz

Title: Challenges in the numerical solution of nonlinear eigenvalue problems

PETER HENRICI PRIZE LECTURE: **Weinan E**, Princeton University, USA

Monday, July 15, FT-Saló d'Actes *Manuel Sanchis Guarner,*19:15h - 20:00h

Chair Person: Lisa Fauci, SIAM President

Title: Machine Learning and Multi-scale Modeling

THE JOHN VON NEUMANN PRIZE LECTURE: **Margaret H. Wright**, Courant Institute of Mathematical Sciences, New York University, USA

Tuesday, July 16, FT-Saló d'Actes *Manuel Sanchis Guarner,* 19:15h - 20:00h

Chair Person: Lisa Fauci, SIAM President

Title: A Hungarian Feast of Applied Mathematics

AWM-SIAM SONIA KOVALEVSKY PRIZE LECTURE: **Catherine Sulem**, University of Toronto, Canada

Wednesday, July 17, FT-Saló d'Actes *Manuel Sanchis Guarner,* 19:15h - 20:00h

Co-Chairs: Ami Radunskaya, AWM President and Lisa Fauci, SIAM President

Title: The Dynamics of Ocean Waves

Tuesday, July 16, FE-Building, Aula Magna, First Floor, Room: FE-1-A

ICIAM - ERC

14:30 - 16:30

Organizer: María Teresa González

During the first part of this session, the President of the European Research Council Jean-Pierre Bourguignon, together with a scientific officer working in the agency, will give an overview of the funding opportunities offered by the ERC as well as some general information on funded projects and the application and evaluation process. This will be complemented by the testimonies of panel members and current ERC grantees.

Informative talk about the ERC, funding schemes and evaluations
Speakers:
Jean-Pierre Bourguignon (ERCEA President)
María Teresa González Cerverón (ERCEA Scientific Officer Mathematics Panel)

ERC grantees and panel members experience
Speakers:
Panel members: Maria J. Esteban and Jose Antonio Carrillo de la Plata
Consolidator grantee: Martin Burger
Advanced grantee: Peter Bühlmann

THE FUTURE OF MATHEMATICS IN THE AGE OF MACHINE LEARNING

17:00 - 19:00

Organizer: Gitta Kutyniok

During the last years, machine learning methods have entered various areas of industrial and applied mathematics, often outperforming classical approaches. At the same time, many of those methods such as deep learning still lack a profound theoretical understanding.
The goal of this looking forward panel is to discuss the potential, but also limitations of machine learning methods in various areas of industrial and applied mathematics as well as possible future directions and visions. The panelists are the chairs of SIAM Activity Groups of main areas in industrial and applied mathematics which are particularly amenable for machine learning methods.

Panelists:

Hans De Sterck (University of Waterloo, SIAM Activity Group on Computational Science and Engineering)
Eitan Tadmor (University of Maryland, SIAM Activity Group on Analysis of Partial Differential Equations)
Gitta Kutyniok (Technische Universität Berlin, SIAM Activity Group on Imaging Science)
James Nagy (Emory University, SIAM Activity Group on Linear Algebra)

Friday, July 19, FE-Building, Aula Magna, First Floor, Room: FE-1-A

CAREERS IN MATHEMATICAL SCIENCES TO ACADEMIA AND INDUSTRY

11:00-13:00

Organizer: Carlos Vázquez

Mathematical sciences are increasingly used in a wide range of application areas of research in industrial sectors. Also the training at all levels evolves accordingly, mainly at the higher levels of master and PhD. In this way, an increasing variety of career opportunities arises to people with high talent in mathematics and a suitable training. On one hand, academic careers are evolving and also producing new profiles strongly based on mathematical and computational skills, with additional deep knowledge on specific applications areas. On the other hand, mathematics is increasingly playing a major role in industrial organizations, thus demanding trained mathematicians with special skills in helping to solve real-world problems arising in industry and society.

In this panel, we aim to discuss about the current and future role to be played by mathematicians in academia and industry, as well as about the possible improvements to develop successful careers in academia and industry. Gender aspects will be also discussed. Panelists represent different mathematical societies, in which the topic of the panel has been largely followed and discussed.

Panelists:
Sven Leyffer (ICIAM)
Volker Mehrmann (European Mathematical Society)
Jill Pipher (American Mathematical Society)
Wil Schilders (European Consortium of Mathematics in Industry)
Ami E. Radunskaya (Association of Women in Mathematics)

Research in Germany at ICIAM

Come and meet us at **booth 5/6** at the Exhibition hall in the Faculty of Psychology (during exhibition hours)

Meet our experts from the following institutions:

- Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)
- German Academic Exchange Service (DAAD)
- Deutsche Mathematiker Vereinigung (DMV)
- Fraunhofer Society
- International Association of Applied Mathematics and Mechanics (GAMM)

…Learn more about the mathematical research landscape in Germany
…Find out about funding opportunities in Germany
…Talk to us about your career in Germany

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Germany

Land of Ideas

The Industry Day is a mathematical technology transfer oriented activity that will take place during the Congress.

The goals are:

- To show to the industrial sector the high innovation potential of the mathematical tools of Statistics & Big Data and MSO (Modelling, Simulation and Optimization).
- To open new channels of communication between researchers and potential users of mathematical tools.

In this full day activity, speakers from industry with a broad representation of the different sectors will be selected. The target audience will be mainly the industrial attendees, but it will also be addressed to the academy and open to the society in general.

Companies with experience of collaboration with academy in these fields are invited to present the results of these collaborations and the benefits that are derived: better products, better services, optimization of processes and/or organization, growth of innovation, improvement of the results account, etc.

The attendance of academic participants is encouraged to exchange experiences and to open new channels of communication between researchers and potential users of mathematical tools. Specific actions of disclosure in companies will be carried out.

INDUSTRY DAY PROGRAM

Wednesday, July 17, 2019, FE-Building, Aula Magna (first floor) Room: FE-1-A

10:30-11:00   **Opening session and welcome**

11:00-13:00   **FIRST SESSION**

- *Mathematics a key enabler for Digital Twins.*

  Dirk Hartmann. Siemens, Corporate Technology (Germany).

  Chair Person: Wil Schilders, President of EU-MATHS-IN

- *The Ferrosolar project: industrial R&D&I for new applications of silicon.*

  Ramón Ordás Badía. Chief Executive Officer of Silicio Ferrosolar (Spain).

  Chair Person: Dolores Gómez Pedreira, Affiliated researcher of ITMATI and Universidade de Santiago de Compostela.

- *Methods and issues for the analysis of complex systems by numerical simulation at EDF.*

  Bertrand Iooss. Senior researcher in EDF R&D, Department PRISME (Performance, Industrial Risk, Monitoring for Maintenance and Operations), Chatou (France).

  Chair Person: Tomeu Coll, Vice President of math-in and Universitat de les Illes Balears.

- *To BEM, or not to BEM, that is the question.*

  Stefan Kurz. Vice President for Strategies and Technologies of Modeling and Simulation, Corporate Sector Research and Advance Engineering, Robert Bosch GmbH (Germany).

  Chair Person: Adérito Araujo, President of the European Consortium for Mathematics in Industry (ECMI).

13:00-14:30   **Lunch break**

14:30-16:30   **SECOND SESSION**

- *How to embed artificial intelligence in a Bank?*

  Julien Crowe. Leader, Artificial Intelligence. National Bank of Canada (Canada).

  Chair Person: Alejandro Adem, CEO and Scientific Director of Mitacs, Canada.

- *Big Data & Machine Learning Strategy in Banco Santander.*

  Álvaro Fernández Velando. Chief Risk Data Officer, Banco de Santander (Spain).

  Chair Person: José Miguel Lorente, Director of Institutions in Comunidad Valenciana and Murcia, Banco Santander, Spain.

- *Solving social and industrial issues via digital co-creation based on advanced mathematical technologies.*
  Hirokazu Anai. Artificial Intelligence Laboratory, FUJITSU LABORATORIES LTD (Japan).
  Chair Person: Osamu Saeki, Director of the Institute of Mathematics for Industry, Japan.

- *Towards Secure and Scalable Industrial Blockchains.*
  Ghassan Karame. NEC Laboratories Europe.
  Chair Person: Osamu Saeki, Director of the Institute of Mathematics for Industry, Japan.

16:30-17:00   Coffee break

17:00-19:00   THIRD SESSION

- *GANESO, a complete tool for gas networks.*
  Carlos Vales Fernández. Director of Hub Project, Reganosa (Spain).
  Chair Person: Alfredo Bermúdez de Castro, member of the Governing Council of ITMATI and Universidade de Santiago de Compostela.

- *Industrial mathematics in Nors Group: driving a new management approach.*
  Margarida Pina. Nors Group Business Development Director. NORS Automotive (Portugal).
  Chair Person: Manuel Cruz, President of PT-MATHS-IN.

- *Mathematics and Los Alamos National Laboratory: Advances and Collaboration.*
  Carrie A. Manore. Staff Scientist, Los Alamos National Laboratory (USA).
  Chair Person: Mª Luisa Rapún, member of the Board of Directors of math-in and Universidad Politécnica de Madrid

- *Algorithms for mass spectral library searching.*
  Arun S. Moorthy. Director's Postdoctoral Fellow and Mathematical Statistician, NIST (USA).
  Chair Person: Carlos Parés, Former Vice-President of math-in and Universidad de Málaga.

19:00-19:15   Break

19:15-20:15   FOURTH SESSION

- *Modeling of an in-situ technique for measuring surface impedance and reflection coefficient using Acoustic Particle Velocity.*
  Graciano Carrillo Pousa. Research & Development, Microflown Technologies (Netherlands).
  Chair Person: Andrés Prieto Aneiros, Afiliated researcher to ITMATI and Universidade da Coruña.

- *Some experiences from mathematical modeling studies with academic institutions.*
  Uwe Beuscher. PSD Modeling & Simulation Team. 7, W.L. Gore & Associates (USA).
  Chair Person: José Luis Ferrín, member of the Board of Directors of math-in and Universidade de Santiago de Compostela.

BEST INDUSTRY-RELATED POSTER AWARDS

ICIAM 2019 will grant two awards ($512 and $307 approx.) to the two best industry-related posters presented at the conference.

These awards, sponsored by *Mathematics* (ISSN 2227-7390), an MDPI Open Access Journal, are part of the Industry Day, a mathematical technology transfer-oriented activity that will take place on Wednesday July 17th, within ICIAM 2019. All posters with the PB- Poster Code are automatically eligible for the prizes.

An evaluation panel will choose the winners. The prizes will be announced and awarded to the authors at the closing session of the Industry Day on Wednesday July 17th, 2019 at the Aula Magna of the FE building.

ACADEMIC SPONSORS OF THE INDUSTRY DAY

European Consortium for Mathematics in Industry (ECMI), Europe.

European Service Network of Mathematics for Industry and Innovation (EU-MATHS-IN), Europe.

Institute of Mathematics for Industry, Japan.

MITACS, Canada.

Rede Portuguesa de Matemática para a Indústria e Inovação (PT-MATHS-IN), Portugal.

Sociedad Española de Matemática Aplicada (SEMA), Spain.

Spanish Network for Mathematics & Industry (math-in), Spain.

Technological Institute for Industrial Mathematics (ITMATI), Spain

CODE	SESSION
IM FT-4-2 1	Academia-industry case studies from MI-NET and ECMI
IM FT-2-3 10	Advances in computation and analysis of PDE's for multiphase system - Part 3
IM FT-2-3 8	Advances in computation and analysis of PDE's for multiphase system - Part 1
IM FT-2-3 9	Advances in computation and analysis of PDE's for multiphase system - Part 2
IM FT-2-2 8	BIGMATH: an ITN-EID project based on academic and industrial cooperation
IM FT-4-2 10	Case studies in industrial mathematics from MACSI
IM FT-4-4 4	ECMI SIG Mathematics for Big Data - Optimization and Statistics
IM FT-4-1 1	EU-MATHS-IN: Success Stories of Mathematics in Societal Challenges and Industry - Part 1
IM FT-4-1 2	EU-MATHS-IN: Success Stories of Mathematics in Societal Challenges and Industry - Part 2
IM FT-4-1 3	EU-MATHS-IN: Success Stories of Mathematics in Societal Challenges and Industry - Part 3
IM FT-4-1 4	EU-MATHS-IN: Success Stories of Mathematics in Societal Challenges and Industry - Part 4
IM FT-4-4 3	Geometrical inverse problems and Completion data
IM FT-4-3 8	Geophysical Applications - Part 1
IM FT-4-3 9	Geophysical Applications - Part 2
IM FT-4-3 10	Geophysical Applications - Part 3
IM FT-4-4 2	Industrial Math Problems Based on Big Data
IM FT-4-3 3	Mathematical and numerical tools for Tsunami Early Warning Systems

CODE	SESSION
IM FT-2-2 1	Mathematical modeling, simulations and theories related to biological phenomena - Part 1
IM FT-2-2 2	Mathematical modeling, simulations and theories related to biological phenomena - Part 2
IM FT-4-3 1	Mathematical Optimization and Gas Transport Networks: Industrial Collaborations - Part 1
IM FT-4-3 2	Mathematical Optimization and Gas Transport Networks: Industrial Collaborations - Part 2
IM FT-4-2 8	Mathematical Solutions of Industrial Applications
IM FT-4-2 2	Mathematics for Industry in the Asia Pacific Area - Part 1
IM FT-4-2 4	Mathematics for Industry in the Asia Pacific Area - Part 2
IM FT-2-3 2	Modeling, Simulation and Optimization in Electrical Engineering - Part 1
IM FT-2-3 3	Modeling, Simulation and Optimization in Electrical Engineering - Part 2
IM FT-2-3 4	Modeling, Simulation and Optimization in Electrical Engineering - Part 3
IM FT-2-2 3	Molecular and Mesoscopic Modelling in Chemical Engineering Data Science - Part 1
IM FT-2-2 4	Molecular and Mesoscopic Modelling in Chemical Engineering Data Science - Part 2
IM FT-4-4 1	New international perspectives in industrial applied mathematics
IM FT-4-2 9	Preparing Future Industrial Mathematicians Through Industry-Academic Partnerships
IM FT-4-1 10	Societal Impact of Industrial Mathematics and Supporting Infrastructures Worldwide - Part 3
IM FT-4-1 8	Societal Impact of Industrial Mathematics and Supporting Infrastructures Worldwide - Part 1
IM FT-4-1 9	Societal Impact of Industrial Mathematics and Supporting Infrastructures Worldwide - Part 2

We are pleased to announce the following events at ICIAM 2019:

PUBLIC LECTURE: **Víctor M. Pérez-García**, Mathematical Oncology Laboratory (MOLAB), University of Castilla-La Mancha, Spain

Thursday, July 18, Palau de les Arts (Ciutat de les Arts i les Ciències), 19:45h – 20:45h

Chair Person: José Antonio Carrillo de la Plata, Imperial College London, UK

Title: Can Mathematics help in the war against cancer?

The fight against disease is one of the greatest challenges in modern society. Mathematics has contributed substantially to the development of many disciplines, such as Physics and Engineering. Life Sciences, and specifically Medicine, are, however, perceived as 'different', because of the complexity of life itself.

In this talk I shall discuss how Mathematics may lead to important breakthroughs in the fight against disease, and what advances are to be expected in the coming decades. I will describe examples involving brain tumors where Applied Mathematics is being used to improve our knowledge and clinical practice well beyond the current standard.
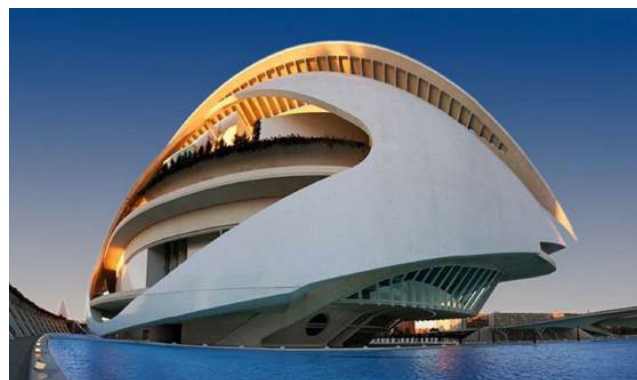
ARCHIMEDES – A PLANETARIUM OPERA BY JAMES DASHOW

Thursday, July 18, 2019, Hemisfèric (Ciutat de les Arts i les Ciències), 22:00h

Tickets can be bought through the on-line registration form at the Special price for Attendees (cost 6€); **Limited places!**

Libretto by Cary Plotkin with Ted Weiss, based on the composer's idea.
Archimedes describes the life of the hellenistic polymath (physicist, mathematician and engineer) from his childhood until the end of his life, based on the Greek historian Plutarch's biography of the Roman general Marcellus.

The selected scenes combine electroacustic music and synchronized video images, vocal soloists and mimes showing physical and mathematical concepts that Archimedes developed and applied to mechanical and pneumatic machines. Dashow adds some artistic licenses towards the end: shortly before dying, Archimedes imagines present-day physics, mathematics and cosmology (Feynman diagrams, string theory, the Big Bang, the multiverse, etc.).

In collaboration with the Conservatorio Superior de Música de Valencia, Escuela Superior de Arte Dramático de Valencia and ISEACV.

The Planetarium Opera, will be celebrated at the Hemisfèric (how to get there). Hemisfèric, was the first element to be built at the Ciutat de les Arts i les Ciències. The Hemisfèric, opened on April 10th 1998, is a unique and spectacular building designed by Santiago Calatrava and represents a large human eye, surrounded by water to enhance its beauty. It houses the planetarium and the largest IMAX Dome cinema in Spain.

LIBRARY - NETWORKING AREA

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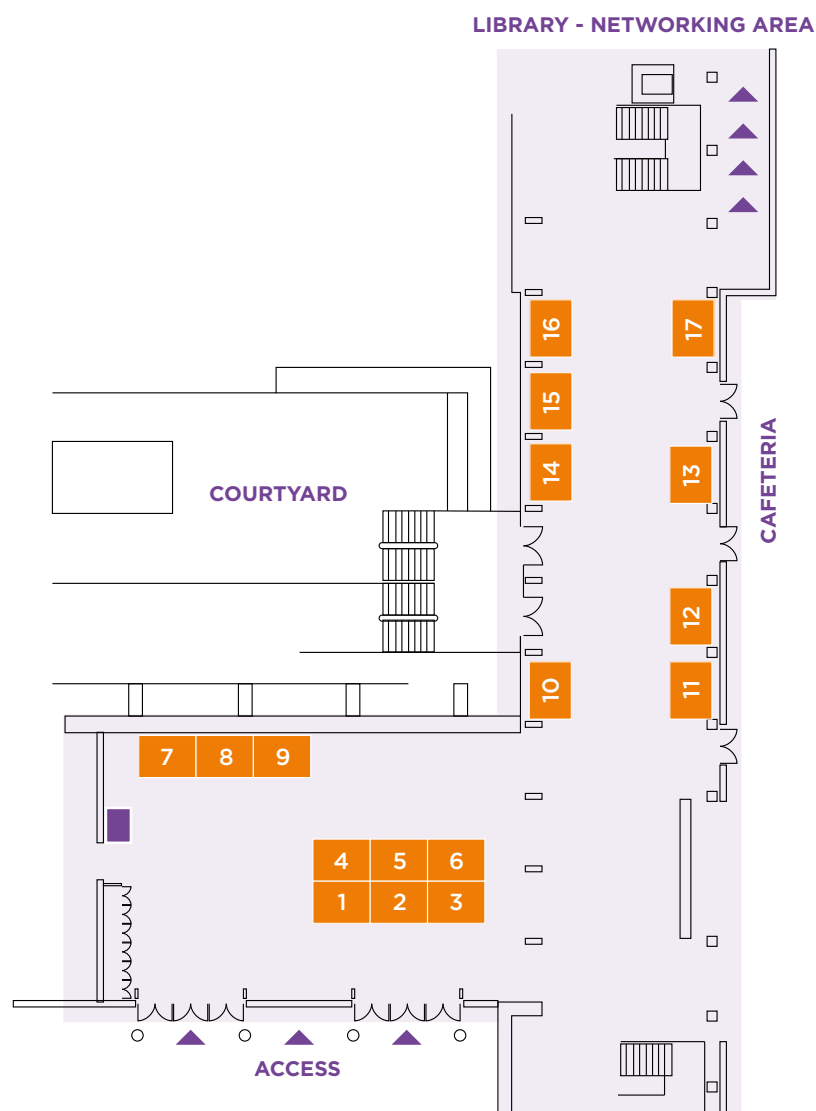
PS - FACULTAT DE PSICOLOGIA	
1 - 2	Society for Industrial and Applied Mathematics (SIAM)
3	MATHWORKS
4	ICIAM 2023 TOKYO
5 - 6	Research in Germany
7 - 9	American Mathematical Society (AMS)
10	Comité Español de Matemáticas (CEMat)
11	Sociedad Española de Matemática Aplicada (SEMA)
12	Société de Mathematiques Appliquées et Industrielles (SMAI)
13	Basque Centre for Applied Mathematics (BCAM)
14	ORBITA
15	Numerical Algorithms Group (NAG)
16	Fundación Española para la Ciencia y la Tecnología (FECYT)
17	European Consortium for Mathematics in Industry (ECMI + EU-MATHS-IN)
■	Unstaffed tabletop: NIMS – National Institute for Mathematical Sciences / South Korea

SIAM (SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS)

PS Booths 1&2

The Society for Industrial and Applied Mathematics (SIAM) is an international community of over 14,500 individual and almost 500 institutional members. Through publications, research, and community SIAM fosters the application of mathematics and computational science to engineering, industry, science, and society. SIAM members enjoy access to publications and career and networking opportunities and discounts on books, conferences, journals, and more.

MATHWORKS

PS Booth 3

MATLAB and Simulink are fundamental computation tools used at more the 5,000 educational intuitions worldwide. MATLAB is one of the top 10 most popular programming languages and is used for teaching, research, and project-based learning. Add MATLAB and Simulink to the classroom to inspire critical thinking and innovation as well as prepare students for prominent careers in industry, where the tools are the de facto standard for R&D. Learn more at mathworks.com

ICIAM TOKIO 2023

PS Booth 4

This booth introduces information about ICIAM 2023 and is provided by the Tokyo Metropolitan Government.
The 10th ICIAM will be held in Tokyo, Japan in August 20-25, 2023. Besides information about ICIAM 2023, we also introduce the charms of Tokyo.

GERMAN RESEARCH FOUNDATION (DFG)

PS Booths 5 & 6

"Research in Germany" is a government-funded initiative that provides information on research and career opportunities in Germany. Whether you want to learn more about mathematical research in Germany in general, go to graduate school, do a postdoc, establish a research group, or spend a sabbatical, we have funding programs and information for all career stages. Stop by our booth and learn more.

AMERICAN MATHEMATICAL SOCIETY

PS Booths 7-9

The American Mathematical Society is dedicated to advancing research and connecting the diverse global mathematical community through our publications, meetings and conferences, MathSciNet®, professional services, advocacy, and awareness programs.

SPANISH COMMITTEE OF MATHEMATICS (CEMAT)

PS Booth 10

The Spanish Committee of Mathematics (CEMat) is the Spanish Adhering Organization to the International Mathematical Union (IMU). Our membership includes societies like RSME, SEMA, SCM, SEIO, FESPM, SEIEM, SEHCyT, as well as institutions like ICMAT, BCAM, CIMNE, CDM, RedIUM and RACEFN. Among its aims are to reinforce the international Spanish presence, to channel initiatives from IMU, CIMPA, ISC and other international organizations, as well as to advice the Spanish Ministries on the matters of our concern. Its web page: http://matematicas.uclm.es/cemat/en/presentation/

SPANISH SOCIETY FOR APPLIED MATHEMATICS (SEMA)

PS Booth 11

The Spanish Society of Applied Mathematics (SEMA) was created in 1991, as a milestone in the development of applied mathematics in Spain and motivated by the quantitative deep change occurred in the preceding decade in the application of the mathematical techniques and methodology, essentially due to the development of parallel and subsequently high performance computing. Today the activity of SEMA is based upon the consideration that mathematical modeling and analysis, numerical simulation and control techniques are essential tools to understand and solve the many challenging problems in physics, chemistry, engineering, biomedical sciences, geosciences, economy, finance, among others.

SOCIÉTÉ DE MATHÉMATIQUES APPLIQUÉES ET INDUSTRIELLES (SMAI)

PS Booth 12

It is a French scientific society aiming at promoting applied mathematics. SMAI was founded in 1983 to contribute to the development of applied mathematics for research, commercial applications, publications, teaching, and industrial training. As of 2009, the society has nearly 1300 members, including both individuals and institutions.

BCAM

PS Booth 13

BCAM is a world-class research center in the field of Applied Mathematics that was founded in 2008 as a Basque Excellence Research Center (BERC), with a focus on interdisciplinary research in Mathematics, as well as training and attracting talented scientists, and promoting scientific and technological advances worldwide. Embedded in a multicultural environment, with more than 90 people from over 25 nationalities working there, BCAM promotes the creation of international and interdisciplinary teams. The center has been awarded twice with the Severo Ochoa distinction that consolidates BCAM as one of the most relevant institutions of the field in Europe.

ORBITA

PS Booth 14

Willing to apply your mathematical knowledge in industrial projects worldwide? Orbita Ingenieria is a Company specialized in designing engineering solutions and automation systems for the most demanding industry sectors, such as Food and Beverage, Automotive, Pharma or Ports &Terminals. Come to discuss our poster and visit us in our stand at the Congress.

NUMERICAL ALGORITHMS GROUP (NAG)

PS Booth 15

The Numerical Algorithms Group (NAG) applies its unique expertise in numerical engineering to delivering high-quality computational software, consultancy and high performance computing services. For over 40 years NAG experts have worked closely with world-leading researchers in academia and industry to provide powerful, reliable and flexible software and solutions relied on by tens of thousands of individual users, as well as numerous independent software vendors. NAG is a not-for-profit organisation and serves its customers from offices in Oxford, Manchester, Chicago and Tokyo, through staff in France and Germany, as well as via a global network of distributors. Together with the globally renowned NAG Library, NAG experts assist others in many ways, whether that be by parallelizing serial codes so they optimally perform on HPC hardware to delivering in-depth technical training courses through developing bespoke algorithms.
www.nag.com

SPANISH FOUNDATION FOR SCIENCE AND TECHNOLOGY (FECYT)

PS Booth 16

The Spanish Foundation for Science and Technology (FECYT) is a public foundation dependent on the Spanish Ministry of Science, Innovation and Universities. Our Mission is to strengthen the link between science and society through actions promoting open and inclusive science, scientific culture and education, and responding to the needs and challenges of the science, technology and innovation system.

ECMI (EUROPEAN CONSORTIUM FOR MATHEMATICS IN INDUSTRY)

PS Booth 17

The European Consortium for Mathematics in Industry (ECMI) is a collaboration between academic institutions and industrial companies throughout Europe.
ECMI aims to promote and support the use of mathematical modelling, simulation and optimization, in all activities of social or economic importance in Europe, as well as to further the education of industrial mathematicians to meet the growing demand for mathematical innovation and research.

EU-MATHS-IN (EUROPEAN SERVICE NETWORK OF MATHEMATICS FOR INDUSTRY AND INNOVATION)

PS Booth 17

EU-MATHS-IN aims to leverage the impact of Mathematical Sciences and Technologies on industrial innovations by enhanced communication and information exchange between and among the involved stakeholders on a European level. Together with its industrial core team it aims to coordinate and facilitate the required exchanges in the field of application-driven mathematical research and its exploitation for innovations in industry, science and enlarged society.

NATIONAL INSTITUTE FOR MATHEMATICAL SCIENCES

PS Unstaffed tabletop

National Institute of Mathematical Sciences is the only government-funded mathematical research institute founded in 2005.

Vision

 - The application of scientific technology and industrial use of mathematics contribute to the improvement of national competitiveness in mathematics.

Mission

 - To meet such national and social demands, NIMS places its goal of conducting strategic R & D, including industrial mathematics, finding and solving mathematical problems in industry and the public sector, and returning the results, and thereby we are trying to contribute to the world through mathematics.

 - NIMS actively pursues R&D partnerships with businesses to promote innovative ideas in mathematics and assist in the development of start-ups that have the potential to surprise the world over, and also aims to establish a problem-solving system and develop specialized programs for start-ups engaging in mathematics.

 - Medical mathematics, which is a new field of study combining medical field and mathematics, is responding to the increasing demands of mathematical solutions for the difficulties of the medical field and making efforts to contribute to the improvement of the health and quality of life.

ICIAM 2019 Exhibit Hall Maps
Facultat de Filosofía i Ciències de l' Educació
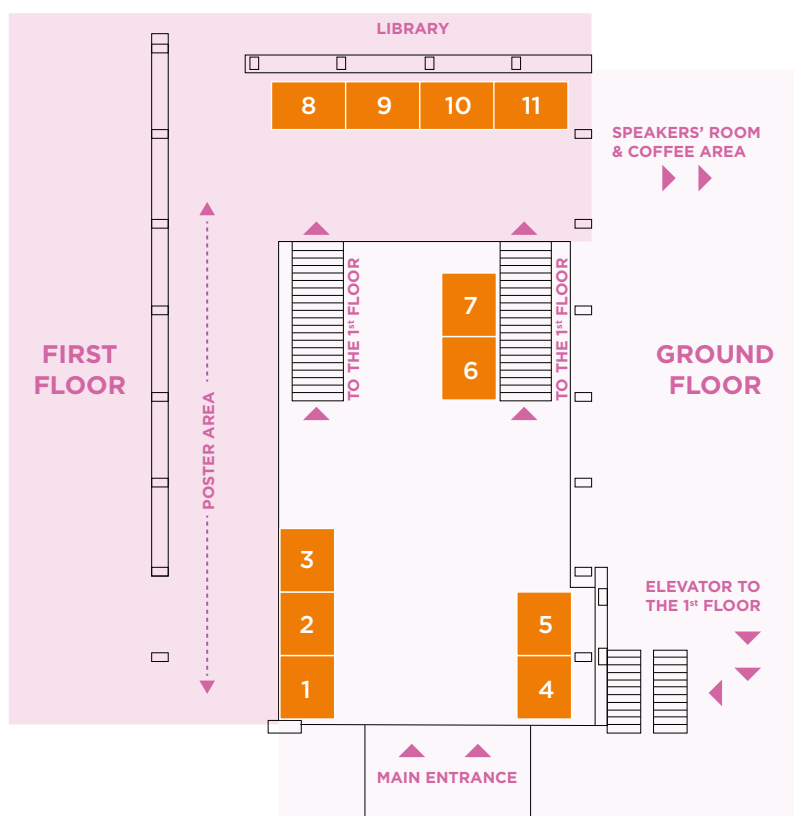
FE - FACULTAT DE FILOSOFÍA I CIÈNCIES DE L' EDUCACIÓ	
1 - 2	CAMBRIDGE University Press
3	PRINCETON University Press
4 - 5	SPRINGER
6	FRONTIERS
7	European Mathematical Society Publishing House
8	ELSEVIER
9	Royal Society Publishing
10	OXFORD University Press
11	TAYLOR AND FRANCIS

CAMBRIDGE UNIVERSITY PRESS

FE Booths 1&2

Cambridge University Press is a not-for-profit organization that advances learning, knowledge and research worldwide. It is an integral part of the University of Cambridge and for centuries has extended its research and teaching activities through an extensive range of academic books, journals and digital products.

PRINCETON UNIVERSITY PRESS

FE Booth 3

Princeton University Press was established in 1905, when Woodrow Wilson was President of Princeton University.
Since that time, we have grown from a small printer of scholarly books to a major academic press, publishing more than 250 new books per year. Princeton University Press was incorporated in 1910 as a non-profit company. It is governed by a Board of Trustees. Privately owned, the Press has throughout its history maintained a close relationship with Princeton University

SPRINGER NATURE

FE Booths 4 & 5

Springer Nature is one of the world's leading global research, educational and professional publishers, home to an array of respected and trusted brands providing quality content through a range of innovative products and services. Springer Nature is the world's largest academic book publisher and numbers almost 13,000 staff in over 50 countries. www.springernature.com

FRONTIERS

FE Booth 6

Frontiers is a leading Open Access Publisher and Open Science Platform.
Our journals are led and peer-reviewed by editorial boards of over 100,000 top researchers. Covering more than 600 academic disciplines, we are one of the largest and highest-cited publishers in the world. To date, our freely accessible research articles have received over 500 million views and downloads and 1 million citations.

EUROPEAN MATHEMATICAL SOCIETY PUBLISHING HOUSE

FE Booth 7

The EMS Publishing House is a not-for-profit organization dedicated to the publication of high-quality peer-reviewed journals and high-quality books, on all academic levels and in all fields of pure and applied mathematics. The proceeds from the sale of our publications will be spent in compliance with the purposes of the European Mathematical Society, particularly the furtherance, dissemination and popularization of mathematical knowledge, furtherance of exchange of ideas between mathematicians in Europe and between mathematicians in Europe and other mathematicians.

ELSEVIER

FE Booth 8

Elsevier publishes world-class mathematics content, from journals and books to online Solutions. Visit booth 3 to hear about our latest news, discover how you can enrich your article with our content innovation and to find out how we ensure content perpetuity.

THE ROYAL SOCIETY

FE Booth 9

The Royal Society journals offer rigorous, constructive peer review; open access options; promotion by a dedicated press office; and broad dissemination to an international audience. To find out more, please visit the Royal Society Publishing booth 9 where Bailey Fallon will be happy to answer your questions. Alternatively, visit our website at: http://royalsocietypublishing.org

OXFORD UNIVERSITY PRESS

FE Booth 10

Oxford University Press is a department of the University of Oxford. It furthers the University´s objective of excellence in research, scholarship, and education by publishing worldwide. OUP is the world´s largest university press with the widest global presence. It currently publishes more than 7.000 new publications a year and has offices in around fifty countries.

TYLOR & FRANCIS GROUP

FE Booth 11

Taylor & Francis Group/CRC Press is a premier global publisher of more than 2,600 journals and over 5,000 new books each year. Visit our booth to discover more about our mathematics products, including world-class references, handbooks and textbooks, and discuss with our team how we can best distribute your research as widely as possible.

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