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Computational Science – ICCS 2022

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Preface

Welcome to the 22nd annual International Conference on Computational Science (ICCS 2022 - https://www.iccs-meeting.org/iccs2022/), held during 21–23 June, 2022, at Brunel University London, UK. After more than two years of a pandemic that has changed so much of our world and daily lives, this edition marks our return to a – partially – in-person event. Those who were not yet able to join us in London had the option to participate online, as all conference sessions were streamed.

Although the challenges of such a hybrid format are manifold, we have tried our best to keep the ICCS community as dynamic, creative, and productive as always. We are proud to present the proceedings you are reading as a result of that.

Standing on the River Thames in southeast England, at the head of a 50-mile (80 km) estuary down to the North Sea, London is the capital and largest city of England and the UK. With a rich history spanning back to Roman times, modern London is one of the world's global cities, having a prominent role in areas ranging from arts and entertainment to commerce, finance, and education. London is the biggest urban economy in Europe and one of the major financial centres in the world. It also features Europe's largest concentration of higher education institutions.

ICCS 2022 was jointly organized by Brunel University London, the University of Amsterdam, NTU Singapore, and the University of Tennessee.

Brunel University London is a public research university located in the Uxbridge area of London. It was founded in 1966 and named after the Victorian engineer Isambard Kingdom Brunel, who managed to design and build a 214m long suspension bridge in Bristol back in 1831. Brunel is well-known for its excellent Engineering and Computer Science Departments, and its campus houses a dedicated conference centre (the Hamilton Centre) which was used to host ICCS. It is also one of the few universities to host a full-length athletics track, which has been used both for practice purposes by athletes such as Usain Bolt for the 2012 Olympics and for graduation ceremonies.

The International Conference on Computational Science is an annual conference that brings together researchers and scientists from mathematics and computer science as basic computing disciplines, as well as researchers from various application areas who are pioneering computational methods in sciences such as physics, chemistry, life sciences, engineering, arts, and humanitarian fields, to discuss problems and solutions in the area, identify new issues, and shape future directions for research.

Since its inception in 2001, ICCS has attracted increasing numbers of attendees and higher-quality papers, and this year – in spite of the ongoing pandemic—was not an exception, with over 300 registered participants. The proceedings series has become a primary intellectual resource for computational science researchers, defining and advancing the state of the art in this field.

The theme for 2022, "The Computational Planet," highlights the role of computational science in tackling the current challenges of the all-important quest for sustainable development. This conference aimed to be a unique event focusing on recent developments in scalable scientific algorithms, advanced software tools, computational

grids, advanced numerical methods, and novel application areas. These innovative novel models, algorithms, and tools drive new science through efficient application in physical systems, computational and systems biology, environmental systems, finance, and other areas.

ICCS is well-known for its excellent lineup of keynote speakers. The keynotes for 2022 were as follows:

- Robert Axtell, George Mason University, USA
- Peter Coveney, University College London, UK
- Thomas Engels, Technische Universität Berlin, Germany
- Neil Ferguson, Imperial College London, UK
- Giulia Galli, University of Chicago, USA
- Rebecca Wade, Heidelberg Institute for Theoretical Studies, Germany

This year we had 474 submissions (169 submissions to the main track and 305 to the thematic tracks). In the main track, 55 full papers were accepted (32%), and in the thematic tracks, 120 full papers (39%). A higher acceptance rate in the thematic tracks is explained by the nature of these, where track organizers personally invite many experts in a particular field to participate in their sessions.

ICCS relies strongly on our thematic track organizers' vital contributions to attract high-quality papers in many subject areas. We would like to thank all committee members from the main and thematic tracks for their contribution to ensure a high standard for the accepted papers. We would also like to thank Springer, Elsevier, and Intellegibilis for their support. Finally, we appreciate all the local organizing committee members for their hard work to prepare for this conference.

We are proud to note that ICCS is an A-rank conference in the CORE classification.

We wish you good health in these troubled times and look forward to meeting you at the next conference, whether virtually or in-person.

June 2022

Derek Groen
Clélia de Mulatier
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