Preface

This volume is dedicated to the *Proceedings* of the 9th International Symposium of Domain Theory and its Applications (ISDT 2022) held on a virtual platform from 4th to 6th July 2022 at the Nanyang Technological University, National Institute of Education, Singapore.

Domains are a special kind of partially ordered sets that can be used to model the notions of approximation and of computation. Invented by Dana Scott in the late 1960s to provide a denotational semantics of programming languages and lambda calculi, domain theory has since evolved rapidly into what we now know as a matured field of mathematical study. The strong interplay between order theory and topology featured prominently in the domain theory gives rise to a natural and aesthetic mathematical framework for modelling and reasoning about computation. Not only has the theory of domains made possible the advancement of research in computer science, but it has also opened up exciting avenues for theoretical developments and practical applications in mathematics, as well as other disciplines.

In China, intense research in the theory of domains has continued – since its introduction during the 1980s – well into the 21st century. ISDT 2022, the ninth international conference in its series, held steadfast to its aim as being an international platform that connected researchers in China and in the world, promoting vibrant research communication and collaboration in this field of study. This ninth ISDT was intended to be a special and refreshing one because it was the first time in the history of ISDT for it to be organized beyond the shores of China, in Singapore. Unfortunately, like many events in the world, the ISDT had not been spared of the adversities of the Covid-19 pandemic. Although the ISDT community was prevented from meeting physically in Singapore, the meeting nevertheless went ahead, thanks to the technological affordance of Zoom as well as the unwavering dedication of the program committee comprising the following co-chairs and 30 other members:

- Weng Kin Ho, Co-Chair, Nanyang Technological University, Singapore
- Dongsheng Zhao, Co-chair, Nanyang Technological University, Singapore
- Achim Jung, Co-chair, The University of Birmingham, U.K.
- Guo-Qiang Zhang, Co-chair, The University of Texas, U.S.A.
- Qingguo Li, Co-chair, Hunan University, China,

the first four of whom also serve as the editors of this volume. The conference was posited to focus on the following themes: topological and logical aspects of domains, categories of domains and powerdomains, continuous and quasi-continuous domains, partial orders and lattice theory, types, process algebra and concurrency, non-classical logics and applications in computer science, programming language semantics, applied topology related to partial orders, topological pospaces and topological algebras.

Conducted as a Zoom meeting, this conference was attended simultaneously by more than a hundred participants (not inclusive of those who joined us at the satellite venue based at Hunan University) across four different time-zones, namely from China, Singapore, Indonesia, Japan, France, Great Britain, U.S.A., Czech, Russia, South Africa, Brazil and Mozambique. The scientific program of the symposium comprised of nine invited lectures and sixteen contributed talks, ranging over a spectrum of topics.

There was unanimous consensus in the closing ceremony that the conference achieved its goals, and the next conference would be held in China. The conference would continue to be anchored on domain theory and its applications, stressing on the links with computer science, logic and semantics, where a particular focus would be chosen based on recent developments and applications. The proceedings of this symposium include selected papers of original research presented at the symposium, submitted to editors after the conference and accepted through a rigorous reviewing process.

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Weng Kin Ho, Dongsheng Zhao, Achim Jung, and Guo-Qiang Zhang
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