

1st Symposium on Algorithmic Foundations of Dynamic Networks

SAND 2022, March 28–30, 2022, Virtual Conference

Edited by

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■ Preface

This volume contains the papers that were presented at the *1st Symposium on Algorithmic Foundations of Dynamic Networks*. Due to the COVID-19 pandemic, the conference was held online, March 28-30, 2022.

The Symposium on Algorithmic Foundations of Dynamic Networks (SAND) is a newly established conference. Its objective is to become the primary venue for original research on fundamental aspects of computing in dynamic networks and computational dynamics, bringing together researchers from computer science and related areas. SAND is seeking important contributions from all viewpoints, including theory and practice, characterized by a marked algorithmic aspect and addressing or being motivated by the role of dynamics in computing. It welcomes both conceptual and technical contributions, as well as novel ideas and new problems that will inspire the community and facilitate the further growth of the area.

The program committee of SAND 2022 consisted of James Aspnes (Co-Chair, Yale University), Luca Becchetti (University of Rome Sapienza), Petra Berenbrink (University of Hamburg), Janna Burman (Université Paris-Sud – LRI), Arnaud Casteigts (University of Bordeaux), Keren Censor-Hillel (Technion), Andrea Clementi (University of Rome Tor Vergata), Giuseppe Antonio Di Luna (University of Rome Sapienza), David Doty (University of California, Davis), Yuval Emek (Technion), Thomas Erlebach (Durham University), Sándor Fekete (TU Braunschweig), Paola Flocchini (University of Ottawa), David Ilcinkas (CNRS, Bordeaux), Zvi Lotker (Bar Ilan University), Toshimitsu Masuzawa (Osaka University), George Mertzios (Durham University), Othon Michail (Co-Chair, University of Liverpool), Rolf Niedermeier (TU Berlin), Rotem Oshman (Tel Aviv University), Andrea Richa (Arizona State University), Nicola Santoro (Carleton University), Christian Scheideler (University of Paderborn), David Soloveichik (University of Texas at Austin), Paul Spirakis (University of Liverpool and University of Patras), Damien Woods (Maynooth University), Viktor Zamaraev (University of Liverpool), and Christos Zaroliagis (University of Patras).

SAND 2022 received 30 submissions. The review process was double-blind and each paper was assigned to at least three members of the program committee with relevant expertise and eventually reviewed by them and/or by additional reviewers whenever needed. The program committee accepted 17 regular papers and 4 brief announcements that cover a wide range of topics in the broad area of algorithmic foundations of dynamic networks and computational dynamics, including DNA self-assembly, dynamic networks and distributed algorithms, mobile computing and robotics, population protocols, and temporal and dynamic graph algorithms. Keynote talks were given by distinguished researchers, to whom we are grateful: Monika Henzinger (University of Vienna), Paul Spirakis (University of Liverpool and University of Patras), and Roger Wattenhofer (ETH Zurich). We would also like to thank Kathrin Hanauer, Monika Henzinger, and Christian Schulz for contributing to the volume a survey on fully dynamic graph algorithms.

The program committee selected the paper “Fast and Succinct Population Protocols for Presburger Arithmetic” by Philipp Czerner, Roland Guttenberg, Martin Helfrich, and Javier Esparza for the Best Paper Award and the paper “Building Squares with Optimal State Complexity in Restricted Active Self-Assembly” by Robert M. Alaniz, David Caballero, Sonya C. Cirlos, Timothy Gomez, Elise Grizzell, Andrew Rodriguez, Robert Schweller, Armando Tenorio, and Tim Wylie for the Best Student Paper Award.

We wish to thank the members of the various committees of SAND as well as its advisory

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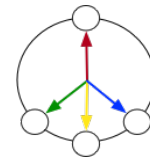


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board, for all the hard work that they have put and which has made it possible to set up a new conference. All have been supportive throughout. We are grateful to the program committee members and to the additional reviewers for devoting time and effort in order to come up with a strong conference program. A special thanks goes to the general chairs of the organizing committee, Giuseppe Antonio Di Luna and Viktor Zamaraev. We are also indebted to the Chair of the SAND steering committee, Paola Flocchini, for all her support, to Giuseppe Prencipe for handling all the financial aspects, and to George Skretas for helping on publicity matters.

Above all, we thank the authors for submitting their work to SAND 2022. We can assure the reader that in this volume they will find well-presented ideas and results that make substantial contributions to our knowledge on the role of dynamics in computing. We do believe that this volume will inspire further work and will contribute to the further growth of this exciting research area.

Finally, we should point out that due to the outbreak of war in Ukraine, the SAND 2022 steering and organizing committees decided to replace the logo of the conference with the *peace dynamic graph*, until ceasefire and return to diplomacy and peace is achieved.



March, 2022

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