Preface

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The conference *Computability, Complexity, and Randomness 2016* (CCR 2016) was the 11th in a series that began in 2004 in Córdoba, Argentina, and has been held all around the world. It is now held annually and is devoted to understanding the relationships between computability and complexity theory, and algorithmic randomness. The 2016 meeting was held in the beautiful Mānoa Campus of the University of Hawai‘i, January 4–8. It featured around 20 lectures and tutorials on a wide variety of subjects, including automata theory, bounded rationality, ergodic theory, and classical effective structure theory. The conference materials are still to be found at <http://math.hawaii.edu/wordpress/ccr-2016/>. The conference had some local interest and even resulted in an interview by a local television station. It was supported by the *Simons Foundation*, the *National Science Foundation*, the *Association for Symbolic Logic*, and the *University of Hawai‘i at Mānoa*.

As is the tradition of this series, we called for submissions for a post-conference special issue devoted to the themes of the meeting. This volume of 6 papers in *Theory of Computing Systems* is the result of these submissions. It consists of significant expansions of results presented at the meeting. All were refereed at the usual ToCS standards.

Most of the papers are devoted to algorithmic randomness. Becher’s paper is concerned with *finite state* randomness where randomness tests are constrained to use only automatic resources. This is a relatively old part of the theory going back to

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work of Schnorr and Stimm, and is related to the notion of Borel normality from number theory. Normality and its relationship to algorithmic randomness is an area of quite significant recent progress; the paper by Calude represents part of this progress. Case's paper is concerned with algorithmic dimension, which refines classical Hausdorff and packing dimension in the same way that notions of algorithmic randomness give meaning to randomness of individual sequences. He proves a number of results relating such notions to reducibilities stronger than Turing reducibility, such as an effective version of Lipschitz reducibility. Miyabe's paper is concerned with *relative* randomness: How to quantify the notion that A is more random than B ? He concerns himself with this question for several notions of randomness such as computable, Schnorr and Kurtz randomness. The last two papers, one by Mayordomo, and the other by Cenzer and Porter are concerned with randomness in settings other than the standard Cantor space. The Cenzer-Porter paper is concerned with the question of randomness for Π_1^0 -classes, that is effectively closed sets; and Mayordomo's is concerned with the definition of algorithmic randomness in general spaces.

We feel that the above is a very nice representation of the business of the meeting, and hope that you enjoy the result. We would like to thank the editorial staff at ToCS and Alan Selman for their help. We hope you enjoy this volume.

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