FOREWORD

Special Issue: "Algebraic Geometry from an Algorithmic Point of View", ACA 2019, Montréal, Canada, July 16–20, 2019

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This volume collects papers on "Algebraic Geometry from an Algorithmic Point of View", which was the title of a session held in the 25th Conference on Applications of Computer Algebra (ACA), July 16–20 2019, at ETS, Montréal, Canada. In the spirit of the conference, this session focused on developments of algorithmic methods by Computer Algebra to solve problems in Algebraic Geometry. The aim was gathering specialists from different areas (Algebraic Geometry, Computer Algebra, Applied Mathematics) and encouraging interactions between them.

There were 11 speakers who gave talks concerning algebraic and combinatorial aspects of problems in Algebraic Geometry, design of algorithms and constructive methods for Algebraic Geometry and applications, implementation of algorithms and optimization, possibly with comparisons with existing ones. The organizers of the session were Cristina Bertone and Francesca Cioffi, who warmly thank the organizers of ACA 2019 (Michel Beaudin, Anouk Bergeron-Brlek, Louis-Xavier Proulx from École de Technologie Supérieure) for providing the venue for the session and the pleasant ambiance during the conference. We believe that this volume portrays the inspiring atmosphere and the collaborative spirit of the ACA conference.

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The call for papers welcomed any original paper within the scopes of the session, not necessarily presented at the conference, and not simultaneously submitted to another journal or conference. Three guest editors served in this Special Issue: Cristina Bertone and Francesca Cioffi, as session organizers, and Luis M. Pardo, member of the Managing Board of AAECC. All the papers have been rigorously refereed according to the journal standards of AAECC. We thank all the referees for the valuable time they spent in order to carefully evaluate the submitted papers and to provide useful arguments for possible improvements. We are grateful to Teo Mora, Editor in Chief of AAECC, for his support and kind guidance in the preparation of this Special Issue. Moreover, we thank the Production Editor Elangovan Ramanathan.

The six accepted papers give contributions to developments of both theoretical and constructive tools in Computer Algebra, and to applications of Computer Algebra in Algebraic Geometry, such as in the study of graphs, of singularities and of toric varieties.

More precisely, following the alphabetic order by the surname of the first author:

- The paper by Evangelos Bartzos, Ioannis Z. Emiris and Joseph Schicho investigates the number of embeddings of minimally rigid graphs relying on the observation that it can be related to the solutions of suitable algebraic systems.
- The paper by Michela Ceria and Teo Mora contributes to extend the theory of involutive divisions to the case of monomials with coefficients over effective rings.
- The paper by Gabriel Mattos Langeloh exploits the notion of neighborhood of a monomial ordering for designing new dynamic unrestricted Buchberger algorithms for Gröbner bases.
- The paper by John Perry presents two dynamic versions of F4 algorithm for computing Gröbner bases, providing analysis of performance and comparing them to other relevant algorithms.
- The paper by Adrien Poteaux and Martin Weimann contributes to the classification of germs of plane curves singularities with computational and theoretical results about the equisingularity type of pseudo-irreducible polynomials.
- The paper by Michele Rossi and Lea Terracini presents two different algorithms for determining all the complete and simplicial fans that admit a fixed non-degenerate set of vectors as generators of their 1-skeleton, with applications concerning toric varieties.