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Foreword from the Editors

This issue of the *Journal of Symbolic Computation* collects selected papers on work presented at the meetings ISSAC (International Symposium on Symbolic and Algebraic Computation, sponsored by the ACM Special Interest Group on Symbolic and Algebraic Manipulation) and Calculemus (International Symposium on the Integration of Symbolic Computation and Mechanized Reasoning), jointly held in St Andrews, Scotland, UK, during the second week of August 2000.

Traditionally, both ISSAC and Calculemus deliver at the time of their meetings proceedings, which include all the accepted papers that will be presented and discussed “in situ.” Such proceedings are very valuable not only, but predominantly, for all those attending the meetings. By their nature proceedings are subject to a number of constraints, like a restricted number of pages per paper, as well as a tight timing to obtain referee reports, to include corrections, and to produce the final versions. Since articles in a journal are not subject to such constraints in the same manner, it was only natural that we, (co-)chairs of Calculemus and of ISSAC 2000, accepted with enthusiasm the proposal of the Editor in Chief of the *Journal of Symbolic Computation*, Professor H. Hong, to devote a special issue in this journal to a few of ISSAC and Calculemus 2000 contributions, presenting full versions of contributions, which substantially extend ideas and topics presented in St Andrews.

As Guest Editors of the special issue, we launched a call for papers in September 2000. We received 20 submissions, covering many different topics. After a detailed refereeing process (with an output of more than 120 pages of reports), including in most cases three or four different reviews, and after at least two feedback opportunities from the referees to the authors and conversely (when needed), 9 papers have been finally selected.

We must remark that all this has been possible in record time, since the final volume had to be ready for the Editor in Chief as early as April 1, 2001. It means that authors and referees have worked very hard and an intensive communication between the authors, the referees and the guest editors took place. We are much indebted to the authors and the referees for their very professional cooperation. Without the fast communication possibilities of the internet and the exchange of a couple of thousand of e-mails this would not have been possible.

Concerning the contents of this issue, we must first emphasize the paper presenting a general introduction to the problems and approaches to integrating computer algebra and mechanized reasoning, corresponding to the joint ISSAC–Calculemus invited lecture by H. Barendregt and A. Cohen.

Moreover, from the ISSAC side, we are proud to remark that the selected papers cover a broad range of topics, including

- several relevant (both theoretically and in practice) improvements to the algorithmic Resolution of Singularities of Villamayor,

- suitable probabilistic algorithms to compute Smith normal forms of matrices arising in the computation of boundary matrices for the homology of simplicial objects,
- a fast algorithm to compute isomorphisms of association schemes and its application to obtaining permutation group normalizers,
- a new approach to computing homomorphism spaces and endomorphism rings of modules,
- an original systematic development of algorithms to deal with finite near-rings, and
- an algebraic approach to dealing with the parametrization of the so-called canal surfaces (of interest in CAD), merged here with the problem of decomposing a polynomial as sum of two squares.

Likewise from the Calculemus side, we are very pleased to be able to present substantial work on the integration of computer algebra systems and mechanized reasoning systems, in particular:

- a major case study for the verification of primality tests using Pocklington's algorithm, and
- the integration of commutative algebra into an advanced proof checker.

We believe that, in all cases, the selected papers are definitely very important ones for the corresponding area of interest and that they will be quoted and consulted often in the years to come. Time will judge if we are right or wrong.

But whatever the verdict of time will be, the Guest Editors would like now to thank the authors who have submitted their precious manuscripts to this issue. Special thanks goes to those authors who submitted very interesting work which in the end could for different reasons not be included in this special issue. Thanks also to the so many anonymous referees, who have worked so devotedly under our hard constraints. What you have in your hands, dear reader, bears the name of the authors, but hidden referees would merit, in many cases, to be credited as well – if such a thing was possible – for so many freely given suggestions, generous improvements and detailed corrections.

Let us conclude by saying that all remaining errors in this issue are surely entirely the fault of the Guest Editors. Dear reader, please be indulgent with them and us and enjoy this issue.

Tomás Recio
General Chair
ISSAC 2000
recio@matesco.unican.es

Manfred Kerber
Co-Chair
Calculemus 2000
M.Kerber@cs.bham.ac.uk