

Call for Papers  
Journal of Symbolic Computation  
Special Issue on  
Efficient Computation of Groebner Bases

Guest Editors:  
Quoc-Nam Tran, Jean-Charles Faugère,  
Hans-Gert Gräbe & Viktor Levandovskyy,

**Aim and scope:**

The Groebner bases method was introduced in 1965 by Buchberger. Later work by the inventor and by many other researchers in the last four decades has mainly added generalizations of the method and many more applications for the method. The Groebner bases method has become one of the most important methods in providing exact solutions of scientific problems in multivariate polynomial ideal theory, computational commutative and non-commutative algebra, elimination theory, solving systems of algebraic equations, etc. It is also being fruitfully used in a variety of research areas in science and engineering as well as in seemingly unrelated research areas such as geometrical theorem proving, integer programming, bases for Bezier splines, robotics and signal theory. The method is implemented in all major computer algebra systems.

Nevertheless, the field is still under active development both in the direction of improving the method by new theoretical insights and in finding new applications. To collect these recent efforts, we have organized the workshop "Efficient Computation of Groebner Bases" within the frame of the Special Semester on Groebner Bases and Related Method in February 2006. The special semester has been organized by Prof. B. Buchberger at the RICAM and RISC institutes in Linz, Austria, from February to July 2006.

This special issue is dedicated to reporting serious improvements in term of efficiency for the Groebner bases method and applications of efficient Groebner bases computation to mathematics, sciences, engineering, logic, education and other research areas. For papers on applications, we are mainly interested in the applications where efficient Groebner bases computation is required and used. The participants of the workshop "Efficient Computation of Groebner Bases" in February 2006 in Linz, Austria are invited to submit papers, but this special issue is open to all who wish to contribute. Relevant topics include, but are not restricted to:

- improved/optimized Buchberger algorithm with complexity analysis and computing time comparisons
- other algorithms for Groebner bases computation
- generalized Groebner bases computation such as involutive bases, bases in various non-commutative settings and bases in difference-differential algebras
- Groebner bases conversion,
- applications of efficient Groebner bases computation.

**Submission guidelines:**

Manuscripts should be submitted to the managing guest editor Quoc-Nam Tran (qntran@rice.edu). They must be prepared in LaTeX using the "Elsevier Article Class (elsart.cls)" with "JSC add-on style (yjSCO.sty)" and "Harvard style references (elsart-harv.bst)". The package "JSC\_LaTeX\_Style.zip" (that contains all the necessary style files and a template) can be obtained from [www.math.ncsu.edu/~hong/jsc/JSC\\_LaTeX\\_Style.zip](http://www.math.ncsu.edu/~hong/jsc/JSC_LaTeX_Style.zip)

Although there is no restriction on length, authors are encouraged to be as concise as possible and to limit their papers to 21 pages.

**Important dates:**

- Deadline for submission of full papers: December 4, 2006.
- Notification of acceptance/rejection: April 30, 2007.
- Final revised manuscripts due: June 30, 2007.
- Appearance of special issue: 2007.

More information can be found at the web-site of the special issue <http://buchberger.cs.lamar.edu/JSC-GB2006/index.jsp>

**Guest editors addresses:**

- Quoc-Nam Tran (Managing Editor), Lamar University & Rice University , qntran@rice.edu
- Jean-Charles Faugère, CNRS/Université Paris 6/INRIA Jean-Charles.Faugere@lip6.fr
- Hans-Gert Gräbe, Universität Leipzig, graebe@informatik.uni-leipzig.de
- Viktor Levandovskyy, RISC-Linz, levandov@risc.uni-linz.ac.at