

Journal of Algebra



Section on

Computational Algebra

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STATEMENT OF PURPOSE

Constructive or computational methods have always been a characteristic feature of algebra. With the introduction of algebraic structures in the 19th century, non-constructive methods came to play until, for some periods in the first half of the 20th century they dominated the constructive methods. The rapid development of computer technology in the second half of that century led to a revival of the constructive methods, which are now used to investigate the algebraic structures.

This is reflected in the ever more papers submitted to the *Journal of Algebra* which make essential use of computer calculations. To provide an appropriate forum for such contributions and to broaden the scope of the Journal the Computational Algebra section was introduced.

What kind of papers are particularly welcome in the Computational Algebra section of the *Journal of Algebra*?

- Results obtained by *computer calculations*. To be suitable for publication such results must represent a major advance of mathematics. It is not sufficient to extend previous computations by means of higher computer power. Rather the contribution has to exhibit new methods and mathematical results to be accepted
- *Classifications* of specific algebraic structures (in form of tables, if appropriate), which are not easily obtained and are useful to the algebraic community
- Description and outcome of *experiments*, to put forward new conjectures, to support existing conjectures, or to give counter examples to existing conjectures
- Papers emphasizing the *constructive aspect* of algebra, such as description and analysis of new algorithms (not program listings, nor, in the first instance, discussions of software development issues), improvements and extensions of existing algorithms, description of computational methods which are not algorithms in the strict sense (since, e.g., they need not terminate)
- Interactions between algebra and computer science, such as automatic structures, word problems and other decision problems in groups and semigroups, preferably, but not necessarily, with an emphasis on practicality, implementations, and performance of the related algorithms

Contributions are welcome from all areas of *algebra*, including *algebraic geometry* or *algebraic number theory*, if the emphasis is on the algebraic aspects.

Contributions describing applications of algebraic results or methods, for example in *coding theory*, *cryptography*, or the algebraic theory of *differential equations* are highly welcome.

An important general criterion for the publication of a paper in the Computational Algebra section is its emphasis on the constructive aspects in the development or revision of a theory, or the solution of a problem.

The contributions will in general be available in print, as well as in electronic form through *ScienceDirect*® (www.sciencedirect.com). The electronic version may contain additional material such as extensive tables or animated pictures.