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Editorial

It is part of the policy of *Acta Applicandae Mathematica* to dedicate, from time to time, a coherent special issue to some topic of particular current interest. Some special issues in the past have been devoted to 'positive operators', 'mathematical biology', 'stochastic and integral geometry', 'symmetries of differential equations', and Newton's method'. The present special issue is devoted to 'computational algebra'.

A computer is basically a device for the very fast and efficient manipulation of strings of symbols. This can be used for numerical computation such as the approximate solution of differential equations. This use of computers is very well known, of course. Computers can also be used for all kinds of symbolic, algebraic, and combinatorial computations. This is, in retrospect, even closer to the basic idea of the 'manipulation of strings of symbols', but it is also a much younger branch of computational mathematics. However, it has now caught on with a vengeance and computer algebra, for example, is a very fast and vigorously developing discipline.

Nowadays, an algebraist often does not feel happy with a new theorem or concept; in addition, he wants a good way to represent things symbolically, he wants an algorithm to compute everything in sight and, preferably, he wants the algorithms implemented within some user-friendly computer algebra package. It is astonishing (to me, in any case) how much can actually be computed (and how difficult it sometimes is to find a sufficiently efficient algorithm in the literature).

All this raises all kinds of new questions in algebra, requiring new ideas and results to handle them. The current double issue of *Acta Applicandae Mathematicae* illustrates this well and also testifies to the large range of computational algebra, as the table of contents shows.

This collection of surveys (also including new research), arising from a special semester on the topic at the University of Rome II 'Tor Vergata', should give the reader a very good idea of the current state of the art in computational algebra.

Bussum, October 1990 MICHIEL HAZEWINKEL