

1038-13-56

Matthias Aschenbrenner and **Anton Leykin***, leykin@ima.umn.edu. *Degree bounds for Gröbner bases in algebras of solvable type.*

Gröbner bases techniques are the engine that drives computations not only in the computational commutative algebra, but also in the noncommutative world, e.g., the algorithmic D -modules theory. The latter is due to the possibility of extending these techniques to algebras of the solvable type, in particular, the Weyl algebra.

In joint work with Matthias Aschenbrenner we have modified the combinatorial approach of Dubé for the commutative polynomial rings in order to yield bounds on the degrees of the elements of Gröbner bases in algebras of the solvable type. These bounds turn out to be in the same complexity class as the bounds over rings of polynomials, i.e., doubly-exponential in the number of generators of the algebra. (Received January 22, 2008)