Dynamical Gröbner bases over Dedekind rings

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May 7, 2011

Abstract

In this paper, we extend the notion of “dynamical Gröbner bases” introduced by the second author to Dedekind rings (with zero divisors). As an application, we dynamically solve the ideal membership problem and compute a generating set for the syzygy module over multivariate polynomial rings with coefficients in Dedekind rings. We also give a partial positive answer to a conjecture about Gröbner rings.

Key words : Gröbner basis, dynamical Gröbner basis, ideal membership problem, principal rings, Dedekind rings, Gröbner rings, constructive mathematics.

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