Intrinsic factorization of ideals in Dedekind domains

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Abstract

We present a generalization of a polynomial factorization algorithm that works with ideals in maximal orders of global function fields. The method presented in this paper is intrinsic in the sense that it does not depend on the embedding of the ring of polynomials into the Dedekind domain in question. The ideal to be factored passes through a three-stage process: radical decomposition, distinct degree factorization and equal degree factorization.