

Factoring polynomials over function fields

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Abstract

If K/k is a function field in one variable of positive characteristic, we describe a general algorithm to factor one-variable polynomials with coefficients in K . The algorithm is flexible enough to find factors subject to additional restrictions, e.g., to find all roots that belong to a given finite dimensional k -subspace of K more efficiently. This has an application to list decoding of AG codes that we also describe.