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Title:	On liftings of powers of irreducible polynomials
Authors:	Khanduja, S.K. (/jspui/browse?type=author&value=Khanduja%2C+S.K.)
Keywords:	Valued fields Non-Archimedean valued fields Irreducible polynomials
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Abstract:	<p>Let v be a henselian valuation of arbitrary rank of a field K with valuation ring R_v having maximal ideal M_v. Using the canonical homomorphism from R_v onto R_v/M_v, one can lift any monic irreducible polynomial with coefficients in R_v/M_v to yield monic irreducible polynomials over R_v. Popescu and Zaharescu extended this approach and introduced the notion of lifting with respect to a residually transcendental prolongation w of v to a simple transcendental extension $K(x)$ of K. As it is well known, the residue field of such a prolongation w is \bar{K}, where \bar{K} is the residue field of the unique prolongation of v to a finite simple extension L of K and Y is transcendental over \bar{K} (see [V. Alexandru, N. Popescu and A. Zaharescu, A theorem of characterization of residual transcendental extension of a valuation, J. Math. Kyoto Univ. 28 (1988) 579–592]). It is known that a lifting of an irreducible polynomial belonging to $\bar{K}[x]$ with respect to w, is irreducible over K. In this paper, we give some sufficient conditions to ensure that a given polynomial in $K[x]$ satisfying these conditions which is a lifting of a power of some irreducible polynomial belonging to $\bar{K}[x]$ with respect to w, is irreducible over K. Our results extend Eisenstein–Dumas and generalized Schönemann irreducibility criteria.</p>
Description:	Only IISERM authors are available in the record.
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