THE GREATEST COMMON DIVISOR OF THE IMAGINARY PARTS OF POLYNOMIALS

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Let K be a field and let $L = K[\xi]$ be a finite separable extension of K of degree $m > 1$. We extend the result due to Nowicki and Spodzieja that, under the assumption of char$K$=0, the imaginary parts of a polynomial $f \in L[Z]\backslash\{0\}$, i.e. the polynomials $u_0, \ldots, u_{m-1} \in K[X_0, \ldots, X_{m-1}]$ such that $f\left(\sum_{j=0}^{m-1} \xi^j X_j\right) = \sum_{j=0}^{m-1} \xi^j u_j$ are relatively prime, to arbitrary characteristic of K.