

POLYNOMIAL ORTHONORMAL BASES FOR A CLASS OF CLOSED RINGS

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Dedicated to the memory of J. Neukirch

ABSTRACT

Let (K, ν) be a locally compact complete valued field relative to a Krull valuation ν , let \bar{K} be a fixed algebraic closure of K and let w be a pseudovaluation on \bar{K} which extends the valuation ν . Let \tilde{K} be the completion of (\bar{K}, w) and let x be a transcendental element of \tilde{K} relative to K . Let E be the topological closure of $K[x]$ in \tilde{K} . In this note we construct a polynomial orthonormal basis for the K -Banach algebra E .