

# ON SOME SUBFIELDS OF $K((X))$

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## ABSTRACT

Let  $K$  be a commutative field and let  $K((X))$  be the field of Laurent series in one variable  $X$ , considered with its natural  $X$ -adic topology. In this paper we prove that any closed subfield  $K \subset L \subset K((X))$  is of the form  $L = K((f))$  and  $K((X))$  is algebraic over  $L$  of degree  $ord_x(f)$ . Some other properties of  $L$  are studied.