Publicacions Matemàtiques, Vol. **44** (2000), 157–175

MAXIMAL NON-JAFFARD SUBRINGS OF A FIELD

Mabrouk Ben Nasr and Noôman Jarboui

Abstract

A domain R is called a maximal non-Jaffard subring of a field L if $R \subset L$, R is not a Jaffard domain and each domain T such that $R \subset T \subseteq L$ is Jaffard. We show that maximal non-Jaffard subrings R of a field L are the integrally closed pseudo-valuation domains satisfying $\dim_v R = \dim R + 1$. Further characterizations are given. Maximal non-universally catenarian subrings of their quotient fields are also studied. It is proved that this class of domains coincides with the previous class when R is integrally closed. Moreover, these domains are characterized in terms of the altitude formula in case R is not integrally closed. An example of a maximal non-universally catenarian subring of its quotient field which is not integrally closed is given (Example 4.2). Other results and applications are also given.

1991 *Mathematics Subject Classification.* Primary 13B02; Secondary 13C15, 13A17, 13A18, 13B25, 13E05.

Key words. Jaffard domain, Krull dimension, valuation domain, strong S-domain, pullbacks.