Ring-theoretic properties in a certain pullback

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Let D be an integral domain with quotient field K, X be an indeterminate over D, $K[X]$ be the polynomial ring over K, $n \geq 2$ be an integer, $K[\theta] = K[X]/(X^n)$, where $\theta := X + (X^n)$, and $R_n := D + \theta K[\theta]$, i.e., $R_n = \{f + (X^n) \in K[X]/(X^n) \mid f(0) \in D\}$. Then R_n is a subring of $K[\theta]$ with total quotient ring $K[\theta]$. In this talk, we will present some ring-theoretic properties of R_n, focusing on Prüfer rings and coherent rings ([1,2]). For example we show when R_n is a Prufer ring, a Bezout ring, a GCD ring, a coherent ring, or a weakly factorial ring.

References

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