A DENSENESS THEOREM FOR ABHYANKAR VALUATIONS

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Let F be an algebraic function field over a field K of characteristic p. An Abhyankar valuation of F/K is a K-rational valuation of F for which the dimension inequality is an equality. Abhyankar valuations of F/K have good properties: their value groups are finitely generated and their residue fields are again algebraic function fields over K.

Let $S(F/K)$ be the set of all K-rational valuations of F. Let τ be the topology on $S(F/K)$ generated by the subbasis that consists of the sets

$$\begin{aligned}&\{v \in S(F/K) \mid v(a) > 0\},\\ &\{v \in S(F/K) \mid v(a) = 0\}, \text{ and}\\ &\{v \in S(F/K) \mid m \nmid v(a)\},\end{aligned}$$

where $a \in F$ and $m \in \mathbb{N} \setminus (\{0\} \cup \{p^n \mid n \in \mathbb{N}\})$. We show that the Abhyankar valuations of rank 1 and the iterated prime divisors lie dense in $S(F/K)$ with respect to τ.

This is joint work with Alexander Prestel.