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On the number of irreducible factors with a given multiplicity in function fields

Let $k \geq 1$ be a natural number and $f \in \mathbb{F}_q[t]$ be a monic polynomial. Let $\omega_k(f)$ denote the number of distinct monic irreducible factors of f with multiplicity k. In this talk, we show that the function $\omega_1(f)$ has a normal order $\log(\deg(f))$ and also satisfies the Erdös-Kac Theorem. We also show that the functions $\omega_k(f)$ with $k \geq 2$ do not have normal order. Such results are obtained by studying the first and the second moments of $\omega_k(f)$ which we explain in brief. This is joint work with Ertan Elma, Wentang Kuo, and Yu-Ru Liu.