ZHENCHAO GE, University of Waterloo

An Additive property for polynomial sequence in function fields

Ruzsa established optimal lower bounds for the natural density $\underline{d}(A + P_k)$ in terms of $\underline{d}(A)$, where $A \subseteq \mathbb{N}$ is a set of small density and P_k denotes the set of kth powers of primes. In this talk, we will introduce a function field analogue of this result. Let $\mathbb{F}$ be a finite field. We show that any weighted polynomial sequence in $\mathbb{F}[t]$ admitting three broad hypotheses satisfies an analogue of Ruzsa's inequality. As a corollary, the inequality holds for degree-k polynomial sequences ($\mathrm{char}(\mathbb{F}) \nmid k$) over irreducible elements. Notably, our the result extends to the case when the polynomial degree exceeds the characteristic.