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The Erdos discrepancy problem over the function fields

The famous Erdos discrepancy problem (now theorem of Tao) asserts that for any sequence \( \{a_n\}_{n \geq 1} = \{\pm 1\}^N \),

\[
\sup_{n,d} \left| \sum_{k=1}^n a_{kd} \right| = \infty.
\]

It was observed during the Polymath5 project, that the analog of this statement over the polynomial ring \( \mathbb{F}_q[x] \) is false. In this talk, we discuss "corrected" form of EDP over \( \mathbb{F}_q[x] \) explaining some features that are not present in the number field setting. The talk is based on a joint work with A. Mangerel (CRM) and J. Teravainen (Oxford).