Title: Davenport and Gao constants for a weighted zero-sum problem with quadratic residues

Joint result with David Grynkiewicz *(Memphis)*

Abstract: Given a ring R and a subset A of R, the A-weighted Davenport constant is the least integer denoted by $D_A(R)$ such that any sequence of terms from R of length $D_A(R)$ has a nontrivial subsequence $g_1 \cdot g_2 \cdot \cdots \cdot g_\ell$ where the g_i are the terms of the subsequence, such that $0 = a_1 g_1 + \cdots + a_\ell g_\ell$ for some $a_i \in A$.

Let $R = \mathbf{Z}/n\mathbf{Z}$ for an integer $n \geq 2$, regarded as a ring, let U_n be the set of units in R, and let $U_n^2 = \{u^2 : \ u \in U_n\}$ be the set of all squares of invertible elements.

We prove that the weighted Davenport constant $D_{U_n^2}(\mathbf{Z}/n\mathbf{Z})$ is equal to $2\Omega(n) + 1$ when $\gcd(n; 10) = 1$ or $\gcd(n; 6) = 1$, where $\Omega(n)$ denotes the total number of prime factors of n.