Title: On quadratic residue codes and hyperelliptic curves

Abstract: For an odd prime p and each non-empty subset $S \subset \mathbf{GF}(p)$, consider the hyperelliptic curve X_S defined by $y^2 = f_S(x)$, where $f_S(x) = \prod_{a \in S}(x-a)$. Using a connection between binary quadratic residue codes and hyperelliptic curves over $\mathbf{GF}(p)$, this talk investigates how coding theory bounds give rise to bounds such as the following example: for all sufficiently large primes p there exists a subset $S \subset \mathbf{GF}(p)$ for which the bound $|X_S(\mathbf{GF}(p))| > 1.62p$ holds.