

Speaker: Lillian Pierce

Title: On Burgess bounds and superorthogonality

Abstract: The Burgess bound is a well-known upper bound for short multiplicative character sums, with a curious proof. It implies, for example, a subconvexity bound for Dirichlet L-functions. In this talk we will present two types of new work on Burgess bounds. First, we will describe new Burgess bounds in multi-dimensional settings. Second, we will present a new perspective on Burgess's method of proof. Indeed, in order to try to improve a method, it makes sense to understand the bigger proofscape in which a method fits. We will show that it can be regarded as an application of superorthogonality. This perspective turns out to unify many topics ranging across harmonic analysis and number theory. We will survey these connections, with a focus on the number-theoretic side.