

Speaker: Maksym Radziwill

Title: Bias in cubic Gauss sums

Abstract: I will discuss recent work with Alex Dunn. Conditionally on the Generalized Riemann Hypothesis we establish a conjecture of S. Patterson from 1978 concerning the existence of a bias in cubic Gauss sums. This explains a well-known numerical bias first observed by Kummer in 1846.

The proof relies on the use of metaplectic forms for the cubic cover of GL_2 and on a new "dispersion" estimate for cubic Gauss sums. Along the way we show that the cubic large sieve of Heath-Brown is sharp, contrary to widely held expectations.

I will explain the tools alluded to above, the rationale for the tools and the main moments of the proof.