



INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

Number Theory Seminar

Date: December 05, 2024

Time: 02:30 PM

VENUE:

L- infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Burgess bounds for short character sums evaluated at forms

SPEAKER:

Aishik Chattopadhyay

RKMVERI, Belur

ABSTRACT:

Lillian B. Pierce and Junyan Xu established a Burgess bound for short multiplicative character sums in arbitrary dimensions, in which the character is evaluated at a homogeneous form that belongs to a very general class of "admissible" forms. This n -dimensional Burgess bound is nontrivial for sums over boxes of side length at least q^β , with $\beta > 1/2 - \frac{1}{2(n+1)}$. This is the first Burgess bound that applies in all dimensions to generic forms of arbitrary degree. Their approach capitalizes on a recent stratification result for complete multiplicative character sums evaluated at rational functions, due to J.Xu. We first illustrate the modified stratification result along with a corollary that L.Pierce and J.Xu developed in their paper and then we shall see how it can be applied in the context of obtaining n -dimensional Burgess Bound, specifically when the leading form of a certain polynomial defines a highly singular projective variety unlike the Burgess's original work.

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