Hong Kong Geometry Colloquium

Saturday, 7 December 2002

LT2, Lady Shaw Building, CUHK

Partial L-functions and Partial Exponential Sums

by

Professor Fu Lei

The Institute of Mathematics of Nankei University

and

The Institute of Mathematical Sciences of the Chinese University of Hong Kong

at 10:00 a.m. - 11:00 a.m.

Abstract: Roughly speaking, partial L-function and partial exponential sums deal with counting the number of part of the solutions of systems of polynomial equations over finite fields, and they arise naturally in number theory and arithmetic geometry. More precisely, let X_0 be a subvariety of the n-dimensional affine space $\mathbf{A}^n$ defined over a finite field $\mathbf{F}_q$. Fix n positive integers $d_1, \ldots, d_n$. For each k, define $N_{d_1,\ldots,d_n}(k)$ to be the number of points $(x_1, \ldots, x_n)$ in X_0 with $x_1 \in \mathbf{F}_{q^{kd_1}}, \ldots, x_n \in \mathbf{F}_{q^{kd_n}}$. The partial zeta function of X_0 is defined to be

$$Z_{d_1,\ldots,d_n}(X_0, t) = \exp(\sum_{k=1}^{\infty} \frac{N_{d_1,\ldots,d_n}(k)}{k} t^k).$$

When $d_1, \ldots, d_n = 1$, we recover the classical zeta function. Similarly, one can define partial L-functions and partial exponential sums.

In this talk which is about a joint work with Daqing Wan, I will sketch a proof of the near rationality of partial L-functions and give an estimate of partial exponential sums.

Moduli Spaces of Principal G Bundles on Curves

by

Professor Vikram B.Mehta

Tata Institute of Fundamental Research

at 11:30 a.m. - 12:30 p.m.

Abstract: The moduli spaces of stable and semistable vector bundles on curves were constructed by Mumford, Narasimhan and Seshadri. In this talk we outline the construction of the moduli spaces of stable and semistable principal G bundles on curves for arbitrary semisimple G, using some results from representation theory in char p.

$\sim$ All are Welcome $\sim$

For enquiry, please contact Dr. K.Zuo at 2609 8900