THE UNIVERSITY  OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

CONFERENCE ON NUMBER THEORY

November 4, 2014

Room 210, Run Run Shaw Building, HKU

10:00 – 11:00	**I. Rezvyakova**, Steklov Mathematical Institute, Russia *An additive problem with the twists of Dirichlet characters*
Coffee break	
11:15 – 12:15	**I.D. Shkredov**, Steklov Mathematical Institute, Russia *Subsets of F_p with small Wiener norm*
Lunch break	
14:30 – 15:30	**B. Kane**, The University of Hong Kong, Hong Kong *Cycle integrals of meromorphic modular forms and CM-values of automorphic forms*
Coffee break	
15:45 – 16:45	**Maxim Korolev**, Steklov Mathematical Institute, Russia *On incomplete Gaussian sums*

Organizers: B. Kane, Y.-K. Lau & K.-M. Tsang

All are welcome

Abstracts

B. Kane, The University of Hong Kong, Hong Kong

Cycle integrals of meromorphic modular forms and CM-values of automorphic forms

We consider inner products on modular forms and regularizations when their naive definitions diverge. In particular, we define a new inner product for meromorphic modular forms. Computing an interesting special case explicitly, we obtain a CM-trace of another interesting modular object. This is based on joint work with Kathrin Bringmann.

Maxim Korolev, Steklov Mathematical Institute, Russia

On incomplete Gaussian sums

In this talk, we will discuss a connection between upper bounds for the absolute value of incomplete Gaussian sum of the type

$$S(q,a;N) \,=\, \sum_{\nu=1}^{N} \exp\left(2\pi i \frac{a\nu^2}{q}\right), \qquad (a,q)=1, \quad 1 \le N \le q$$

and the properties of continued fraction for $\frac{a}{q}$. In particular, we will speak about numerical value of the constant κ in the inequality

$$|S(q,a;N)| \,\le\, \kappa\sqrt{q}.$$

I. Rezvyakova, Steklov Mathematical Institute, Russia

An additive problem with the twists of Dirichlet characters

We consider an additive problem

$$\sum_{\substack{an-bm=l,\\ n\le N}} \tau_{v,w}(n)\tau_{v,w}(m)$$

with the following coefficients

$$\tau_{v,w}(n) = \sum_{d|n} \chi_v(d)\chi_w(n/d)$$

and obtain an asymptotic formula using the estimates on Kloosterman sums.

I.D. Shkredov, Steklov Mathematical Institute, Russia

Subsets of F_p with small Wiener norm

We obtain new lower bounds for Wiener norm of a set A (l_1-norm of Fourier transform of its characteristic function) from the prime field F_p. Thus we get some progress in so-called Littlewood conjecture in F_p as well as in a quantitative version of Beurling-Helson theorem.