47th Seminar Aachen-Bonn-Köln-Lille-Siegen on Automorphic Forms

Max-Planck-Institut für Mathematik in Bonn, March 1, 2016

Board:
K. Bringmann, J. Bruinier, V. Gritsenko, A. Krieg, P. Moree, G. Nebe, N-P. Skoruppa, S. Zwegers

This is the 47th meeting of the joint French-German intercity seminar on automorphic forms. Everybody who is interested in automorphic forms is welcome. We encourage in particular young researchers to participate and to report on their work in one of our meetings. For further informations concerning this meeting please send an email to moree@mpim-bonn.mpg.de

When: Tuesday, March 1, 2016
Where: Max-Planck-Institut für Mathematik
Vivatsgasse 7, 53111 Bonn, MPI Lecture Hall
Organizer: Pieter Moree

Schedule

14:00 – 14:50	Yuri Manin (MPIM) Generalized Dedekind symbols for modular forms of real weights
15:00 – 15:50	Thorsten Paul (Universität des Saarlandes) The Fourier-Jacobi-decomposition of Eisenstein series of Klingen type
16:00	Coffee and Tea Break
17:00 – 17:50	Jitendra Bajpai (MPIM) Theory of vector-valued modular forms
18:00	Dinner, Ristorante-Pizzeria Tusculo Münsterblick

Abstracts

Yuri Manin (MPIM)

Generalized Dedekind symbols for modular forms of real weights

Fukuhara defined generalized Dedekind symbols as functions on $P^1(\mathbb{Q})$ with values in an abelian group satisfying a short list of relations. In a previous paper, I have generalized this definition to the case of possibly non-commutative groups and constructed non–commutative generalized Dedekind symbols for classical $PSL(2,\mathbb{Z})$ cusp forms, using iterated period polynomials. Here I generalize this construction to forms of real weights using their iterated period functions introduced and studied in a recent article by R. Bruggeman and Y. Choie.

Thorsten Paul (Universität des Saarlandes)

The Fourier-Jacobi-decomposition of Eisenstein series of Klingen type

The space of Siegel modular forms of degree n and weight k has a decomposition in a direct sum

$$M_n^k = \oplus_{m=0}^{n} M_{n,m}^k,$$

where the space $M_{n,m}^k$ corresponds to the space of cusp forms of degree m and weight k. A Siegel modular form of degree n has Fourier-Jacobi expansions of degree $r \leq n$. The spaces of Jacobi forms have (by work of Dulinski) similar decompositions. I want to describe how these decompositions fit together, meaning to compute the decomposition of a Fourier-Jacobi-coefficient of a Siegel modular form in $M_{n,m}^k$.

Jitendra Bajpai (MPIM)

Theory of vector-valued modular forms

Modular forms and their generalizations are one of the most central concepts in number theory. It took almost 300 years to cultivate the mathematics lying behind the classical (i.e. scalar) modular forms. All of the famous modular forms (e.g. Dedekind eta function) involve a multiplier, this multiplier is a 1-dimensional representation of the underlying group. This suggests that a natural generalization will be matrix valued multipliers, and their corresponding modular forms are called vector valued modular forms. These are much richer mathematically and more general than the (scalar) modular forms. In this talk, a story of vector valued modular forms for any genus zero Fuchsian group of the first kind will be told. The connection between vector-valued modular forms and Fuchsian differential equations will be explained.