The Euler International Mathematical Institute
St. Petersburg, Tuesday, May 22, 2018

54rd Seminar Aachen-Bonn-Köln-Lille-Siegen on Automorphic Forms

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

This is the 54rd meeting of the joint French-German seminar on automorphic forms. This session is a part of the research school “Modular Forms and Beyond” organised by PDMI and the Laboratory of Mirror Symmetry and Automorphic Forms of NRU HSE (Moscow) and supported by the Simons Foundation.

When: Tuesday, May 22, 2018

Where: EIMI, St. Petersburg
http://www.pdmi.ras.ru/EIMI/2018/Sagaf/index.html

16:15—16:45 Haowu Wang (CEMPI, Lille)
Non-existence of 2-reflective modular forms

16:45—17:15 Martin Woitalla (RWTH, Aachen)
Coordinates for the graded ring of modular forms on the Cayley half-space of degree two

17:30—18:00 Aleksandr Kalmynin (NRU HSE, Moscow)
Cohen-Kuznetsov series and intervals between numbers that are sums of two squares

18:00—18:30 Paul Kiefer (TU-Darmstadt)
Boundary Components of the Orthogonal Upper Half-Plane

18:30—19:30 Coffee, tea, sandwiches, pies

20:00—22:30 Excursion along the rivers

Aleksandr Kalmynin *(NRU HSE, Moscow)* Cohen-Kuznetsov series and intervals between numbers that are sums of two squares

The study of distribution of gaps between numbers that can be expressed as a sum of two perfect squares is a classical problem in analytic number theory, that dates back to Euler. In my talk I will present some new results that connect the distribution of gaps with Cohen-Kuznetsov construction for Jacobi-type forms and allow to improve the results on the moments of gaps between sums of two squares.

Paul Kiefer *(TU-Darmstadt)* Boundary Components of the Orthogonal Upper Half-Plane

In this talk we will introduce the boundary components of the orthogonal upper half-plane and discuss results about their structure for the orthogonal group and the corresponding discriminant kernel. We will see that the 1-dimensional boundary components are modular curves intersecting only at the cusps and specify the corresponding congruence subgroups. Afterwards we will count the number of 0-dimensional and 1-dimensional boundary components.

Haowu Wang *(CEMPI, University of Lille)* *Non-existence of 2-reflective modular forms*

An even lattice L of signature (2,n) is called 2-reflective if it admits a holomorphic modular form whose support of zero divisor is contained in the Heegner divisor determined by the (-2)-vectors in L. In this talk we give a formula expressing the weight of 2-reflective modular forms and prove that there is no 2-reflective lattice when n<=15 and n<=19 except the even unimodular lattices of signature (2,18) and (2,26).

Martin Woitalla *(RWTH, Aachen)* Coordinates for the graded ring of modular forms on the Cayley half-space of degree two

A result by Hashimoto and Ueda says that the graded ring of modular forms with respect to SO(2,10) is a polynomial ring in modular forms of weights 4, 10, 12, 16, 18, 22, 24, 28, 30, 36, 42. We show that one may choose Eisenstein series as generators. This is done by calculating sufficiently many Fourier coefficients of the restrictions to the Hermitian half-space. Moreover, we give several constructions of the skew-symmetric modular form of weight 252.