

## 53rd Seminar Aachen-Bonn-Köln-Lille-Siegen on Automorphic Forms

RWTH Aachen, Wednesday, February 14, 2018

Organizers:

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

This is the 53rd meeting of the joint French-German 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 information concerning this meeting please send an email to [krieg@rwth-aachen.de](mailto:krieg@rwth-aachen.de)

*Note:* If you come by car and want to use an RWTH parking lot please contact us in advance. Cars without a permit are towed away.

When: Wednesday, February 14, 2018

Where: RWTH Aachen – Templergraben 55 – 52062 Aachen – Hauptgebäude  
– Hörsaal III

### Schedule

2 p.m. – 3 p.m.

**Dr. Markus Schwagenscheidt (TU Darmstadt)**  
*Kronecker limit formulas for parabolic, hyperbolic and elliptic Eisenstein series via Borcherds products*

3 p.m. – 4 p.m.

**Brandon Williams (UC Berkeley/RWTH Aachen)**  
*Computing obstruction spaces to Borcherds products*

4 p.m. – 5 p.m.

**Coffee and Tea Break (room 158)**

5 p.m. – 6 p.m.

**Prof. Dr. Valery Gritsenko (University of Lille/IUF/NRU HSE)**  
*Reflective modular forms: old and new*

6 p.m.

**Dinner**

## Abstracts

**M. Schwagenscheidt:** *Kronecker limit formulas for parabolic, hyperbolic and elliptic Eisenstein series via Borcherds products*

The classical Kronecker limit formula describes the constant term in the Laurent expansion at the first order pole of the usual (parabolic) non-holomorphic Eisenstein series. Recently, the meromorphic continuation and Kronecker limit type formulas were investigated for hyperbolic and elliptic Eisenstein series by Jorgenson, Kramer and von Pippich. In joint work with Anna von Pippich and Fabian Völz, we realized averaged versions of all three types of Eisenstein series for  $\Gamma_0(N)$  as regularized theta lifts of a single type of Selberg-Poincaré series. Using this realization we derive the meromorphic continuation and Kronecker limit formulas in terms of logarithms of Borcherds products for the above Eisenstein series.

**B. Williams:** *Computing obstruction spaces to Borcherds products*

This talk describes a construction of a basis of cusp forms for Weil representations with rational coefficients that can be computed quickly, and their application to computing Borcherds products.

**V. Gritsenko:** *Reflective modular forms: old and new.*

In this talk I give a review of the new classification results of reflective quadratic lattices and reflective modular forms obtained by Gritsenko-Nikulin in two papers published recently in PLMS and Transaction of Moscow Math. Soc. Then I shall discuss the special reflective modular forms of singular weights, "special theta-functions", which give new infinite series of identities between additive and multiplicative liftings of paramodular Siegel forms in the context of the conjecture of theta-blocks of  $q$ -order 1. In particular, I prove this conjecture for the theta-blocks of type  $10\theta/6\eta$  (the recent result of Gritsenko-Wang),  $9\theta/3\eta$  and  $8\theta$ , etc. At the end, I discuss some application of this stuff to algebraic geometry and arithmetic.