



Seminar Aachen-Köln-Lille-Siegen on Automorphic Forms

Universität zu Köln, 19 February, 2014

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

This is the 42nd meeting of the joint French-German seminar on automorphic forms which is organized by the universities of the four cited cities. 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 kbringma@math.uni-koeln.de.

When: Wednesday, 19 February, 2014

Where: Universität zu Köln – Gyrhofstr. 15 – 50931 Köln – Großer Hörsaal der Botanik

Schedule

1.30 pm – 2.20 pm

Prof. Dr. Don Zagier (Bonn)

Quasimodular forms and the holomorphic anomaly equation

2.45 pm – 3.35 pm

Dr. Larry Rolen (Köln)

Inverse theta functions and quantum modular forms

3.45 pm – 4.45 pm

Tea/Coffee Break

4.45 pm – 5.35 pm

Prof. Dr. Ulf Kühn (Hamburg)

Multiple Eisenstein series, multiple divisor functions and applications to multiple zeta values

6.00 pm

Dinner

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Abstracts

Prof. Dr. Don Zagier (Bonn): *Quasimodular forms and the holomorphic anomaly equation*

Abstract: TBA

Dr. Larry Rolen (Köln): *Inverse theta functions and quantum modular forms*

Abstract: In joint work with Kathrin Bringmann and Thomas Creutzig, we consider the Fourier coefficients of a special class of meromorphic Jacobi forms of negative index. Much recent work has been done on the Fourier coefficients of meromorphic Jacobi forms of positive index, but almost nothing is known for Jacobi forms of negative index. Here we show that their Fourier coefficients have a simple decomposition in terms of partial theta functions using elliptic functions. In particular, we find a new infinite family of rank-crank type PDEs generalizing the famous example of Atkin and Garvan. We then describe the modularity properties of these coefficients, showing that they are what we call mixed quantum modular forms.

Prof. Dr. Ulf Kühn (Hamburg): *Multiple Eisenstein series, multiple divisor functions and applications to multiple zeta values*

Abstract: Once a natural partial ordering in a lattice is chosen, the multiple Eisenstein series generalize classical Eisenstein series very similar as multiple zeta values generalize the special values of the Riemann zeta function. These new kind of functions on the upper half plane have a rich arithmetic structure. In particular they give rise to multiple divisor functions. These are formal power series in q which occur in the Fourier expansion of multiple Eisenstein series. We present some recent result on the algebra of such functions and present some applications to multiple zeta values. This is joint work with Henrik Bachmann (Uni Hamburg).