



Seminar Aachen-Köln-Lille-Siegen on Automorphic Forms

Universität zu Köln, 14 March, 2012

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

This is the 35th 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, 14 March, 2012

Where: Universität zu Köln – Weyertal 86 – 50931 Köln – Hörsaal des
Mathematischen Instituts

Schedule

1.30 pm – 2.30 pm

Prof. Dr. Nikolaos Diamantis (Nottingham)
*Multiple Dirichlet series and second order
automorphic forms*

2.45 pm – 3.45 pm

PD. Dr. Jörg Jahnel (Siegen)
K3 Surfaces and their Picard ranks

3.45 pm – 4.45 pm

Tea/Coffee Break

4.45 pm – 5.45 pm

Prof. Dr. Kathrin Bringmann (Köln)
*Kac-Wakimoto characters and almost
holomorphic modular forms*

6.00 pm

Dinner

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Abstracts

Prof. Dr. Nikolaos Diamantis (Nottingham): Multiple Dirichlet series and second order automorphic forms.

Abstract: We present a double Dirichlet series induced by a second order automorphic form. This construction indicates that double Dirichlet series may originate from a large class of objects than previously thought. In the opposite direction, we present a converse theorem for multiple Dirichlet series which seems to impose restrictions on that class in some cases.

PD. Dr. Jörg Jahnel (Siegen): *K3 Surfaces and their Picard ranks*

Abstract: The goal of this talk is to report on a project to compute the Picard rank for certain K3 surfaces. The methods are based on reduction modulo p . They will be explained in some detail and examples will be given.

At the end of the talk, a statistical test will be presented showing that for each K3 surface in two large samples, suitable primes may be found and the Picard rank may be determined. The samples are motivated by classical families considered by 19th century geometers.

Prof. Dr. Kathrin Bringmann (Köln): Kac-Wakimoto characters and almost holomorphic modular forms

Abstract: In joint work with Amanda Folsom, we resolve a question of Kac, and explain the automorphic properties of certain characters due to Kac and Wakimoto. We prove that they are essentially holomorphic parts of certain generalizations of harmonic weak Maass forms which we call “almost harmonic Maass forms”. Loosely speaking, such functions may be viewed as sums of harmonic weak Maass forms under iterates of the raising operator (themselves therefore non-harmonic weak Maass forms), multiplied by almost holomorphic modular forms.