59th Seminar Aachen-Bonn-Köln-Lille
on Automorphic Forms

Bonn University, Wednesday, June 8, 2022

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

This is the 59th 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 moree@mpim-bonn.mpg.de

Note: If you come by car and want to get some tips regarding parking please send an email to blomer@math.uni-bonn.de

Local organizers: V. Blomer (Bonn University) and P. Moree (MPIM Bonn)

When: Wednesday, June 8, 2022
Where: Physikalisches Institut, Kleiner Hörsaal (on second floor), Wegelerstr. 10, 53115 Bonn

Schedule

2 p.m. **Soumya Das (Indian Institute of Science)**
Sup-norm problems for Siegel and Jacobi modular forms

3 p.m. **Eugenia Rosu (Darmstadt)**
Twists of elliptic curves with CM

4 p.m. **Coffee Break**

5 p.m. **Petru Constantinescu (Bonn University)**
Dissipation of correlations of automorphic forms

6 p.m. **Dinner in Tuscolo Münsterblick**

Abstracts

Soumya Das: Sup-norm problems for Siegel and Jacobi modular forms.

We will discuss recent results on the sup-norm of holomorphic Siegel and Jacobi modular forms in the weight aspect. We propose precise conjectures for the sizes of such spaces, measured by the Bergman kernel. We will report on some progress towards these conjectures. We will further discuss the same questions for the Saito-Kurokawa lifts. These considerations also take us through the first moments of central values of twisted L-functions, which may be of independent interest.

Eugenia Rosu: Twists of elliptic curves with CM

We consider certain families of sextic twists of the elliptic curve y^2=x^3+1 that are not defined over Q, but over Q[sqrt(-3)]. We compute a formula that relates the central value of their L-functions L(E, 1) to the square of a trace of a modular function evaluated at a CM point. Assuming the Birch and Swinnerton-Dyer conjecture, when the value above is non-zero, we should recover the order of the Tate-Shafarevich group, and we show that the value is indeed an integer square.

Petru Constantinescu: *Congruences of modular forms on arithmetic progressions*

Mass equidistribution of eigenfunctions is a central topic in quantum chaos and number theory. In this talk we highlight a generalisation of the Quantum Unique Ergodicity for holomorphic cusp forms in the weight aspect. We show that correlations of masses coming from off-diagonal terms dissipate as the weight tends to infinity. This corresponds to classifying the possible quantum limits along any sequence of Hecke eigenforms of increasing weight.