ESI **The Erwin Schrödinger International Institute for Mathematical Physics**

Boltzmanngasse 9/2
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ZVR 298034776

Spectra of arithmetic groups

October 8 - October 11, 2007

organized by J. Schwermer

- Monday, October 8, 2007

  11:00 a.m.: **Goran Muic (Zagreb)**: *Degenerate Eisenstein series and the construction of residual automorphic representations for split classical groups I*

  Abstract: In this and the subsequent talk we will present a construction and determination of poles of degenerate Eisenstein series that generalizes the construction of Piatetski-Shapiro and Rallis (Lect. Notes Math.1254). This is then applied to a construction of residual automorphic representations. We discuss how signs of local normalized intertwining operators on certain degenerate principal series representations are used to determine a non–vanishing of Eisenstein series at $s = 0$ and how this determines residual automorphic representations. We compute Arthur parameters for the residual representations so constructed. We explain the example of residual automorphic forms that are spherical at all places. If time permits, we give the example of $Sp(4)$ which contains the simplest possible but non-trivial case of our construction.

  2:00 p.m.: **Joachim Mahnkopf (Vienna)**: *Traces on Hecke algebras and p-adic families of automorphic forms*

  Abstract: We construct p-adic families of automorphic forms on GL(2) as predicted by the Mazur Gouvea conjecture. In the ordinary case we obtain the full conjecture, in the non-ordinary case our result is weaker than the M-G-conjecture. The M-G-conjecture has been proven in the ordinary case by Hida and in general using completely different (geometric) methods by Coleman. Our construction which again is completely different is based on a comparison of trace formulas, a technique which we adopted from the Langlands program.

- Tuesday, October 9, 2007

  11:15 a.m.: **Harald Grobner (Vienna)**: *Eisenstein series and the cohomology of arithmetic subgroups of Sp(2,2)*

  2:00 p.m.: **Ulrich Stuhler (Göttingen)**: *Buildings of Kac-Moody groups and representations*

  Abstract: It is well known, that the theory of buildings of a reductive group over a p-adic field is of considerable help for the representation theory of these groups. There might be a similar relation for the case of Kac-Moody groups, in particular, considered with values in a finite field. In the talk a few problems related with these concepts will be discussed.

  3:30 p.m.: **Jürgen Rohlfs (Eichstätt)**: *On Lefschetz numbers on the cohomology of arithmetic groups* or *On modular symbols*

- Wednesday, October 10, 2007

  11:30 a.m.: **Christoph Waldner (Vienna)**: *Cycles and the cohomology of arithmetic subgroups of the exceptional group G_2*

  2:00 p.m.: **Marcela Hanzer (Zagreb)**: *Aubert involution for the classical groups - unitarizability questions*

  Abstract: There is a well known conjecture of Bernstein claiming that Aubert involution preserves unitarity of smooth irreducible representations of reductive groups. I will describe some progress in the study of this conjecture in the special case of classical groups and discrete series representations.

  3:30 p.m.: **Goran Muic (Zagreb)**: *Degenerate Eisenstein series and the construction of residual automorphic representations for split classical groups II*

- Thursday, October 11, 2007

  2:00 p.m.: **Neven Grbac (Zagreb)**: *The residual spectra of inner forms*

  Abstract: In the talk the recent results on the residual spectra of hermitian quaternionic classical groups and the general linear group over a division algebra will be discussed. The approach to the residual spectrum is the Langlands spectral theory, i.e. calculation of the poles of the Eisenstein series. However, in the case of general linear group we also use the description of the whole discrete spectrum by I. Badulescu which is obtained using the Arthur trace formula. The required normalization by L-functions of the standard local intertwining operators at non-quasi-split places is out of the scope of the Langlands-Shahidi method. Hence, we have developed a new technique based on the comparison of the Plancherel measures obtained by a global argument firstly used by G. Muic and G. Savin. It turns out that in some cases the normalization is not of the same form as the Langlands-Shahidi normalization at split places which gives interesting local conditions in the description of the residual spectra.

  3:30 p.m.: **Marco Tadic (Zagreb)**: *Unitarizability and automorphic spectra - recent progress*

All lectures take place at the ESI Schrödinger Lecture Hall