Automorphic forms and representations
Formes automorphes et représentations
(Org: **Clifton Cunningham** (University of Calgary) and/et **Mishty Ray** (University of British Columbia))

NICOLAS ARANCIBIA, Cergy Paris Université
Proving the Enhanced Shahidi Conjecture for Real Groups.

For a real group G, it follows from the work of Kostant and Vogan that the L-packet associated with an L-parameter ϕ contains a generic representation if and only if the corresponding $\check{G}$-orbit in the variety of geometric parameters is open.

In this talk, we prove an analogous criterion for Adams–Barbasch–Vogan micro-packets: the micro-packet attached to ϕ contains a generic representation precisely when the associated orbit is open. As an application, we establish the Enhanced Shahidi Conjecture for real groups, showing that the Arthur packet attached to an A-parameter ψ contains a generic representation if and only if the restriction $\psi|_{\mathrm{SL}_2}$ is trivial.

Micro-packets are defined in terms of characteristic cycles of D-modules. To establish our result, we explicitly compute these characteristic cycles in the case of D-modules associated with generic representations. We do this by exploiting the existence of a Weyl group action on both the domain and the codomain of the characteristic cycle map, which makes this map equivariant.

KRISTAPS BALODIS, University of Calgary

ADELE BOURGEOIS, Carleton University

JOSE CRUZ, University of Calgary

JULIA GORDON, University of British Columbia

SIMRAN KHUNGER, University of Michigan

ANDREW KNIGHTLY, University of Maine
Counting newforms with prescribed ramified supercuspidal components

We recently gave a general trace formula which counts the number of classical newforms of fixed weight and level whose local components at the primes dividing the level are prescribed supercuspidal representations. To make the formula explicit, one must compute certain local orbital integrals at each such prime. At present, this has been carried out only when the fixed supercuspidals have conductor exponent 2 or 3.

In joint work with Kimball Martin, we obtain a dimension formula that allows for prescribed supercuspidals of any odd-power conductor (the so-called ramified supercuspidals). We are able to get around having to compute the tricky orbital integrals by

using the trace of an Atkin-Lehner operator. As a consequence of our formula, we observe a bias in global dimension formulas favoring certain supercuspidals over others with the same conductor exponent, though asymptotically there is balance as first shown in a much more general setting by Kim, Shin and Templier. Interestingly, the magnitude of this bias is independent of the (odd) conductor exponents. The sign of the bias is the global root number.

DIDIER LESESVRE, Université de Lille

SPENCER LESLIE, Boston College

CALLIE LIDDLE, Carleton University
Singularities of K-orbits on the flag variety of G_2

We define G_2 as a complex Lie group with Lie algebra of type G_2. K is the centralizer of a particular element of order 2 in G_2. We parameterize the orbits of K acting on the flag variety of G_2, and use MAGMA software to determine where the singularities of the K-orbit closures lie. We provide applications for the representation theory of G_2.

SADIE LIPMAN, University of Michigan

SIDDHARTH MAHENDRAKER, Boston College

GILL MOSS, University of Maine

ATONU MUKHERJEE, University of British Columbia

TAEUK NAM, Harvard University

MONICA NEVINS, University of Ottawa
On 4-packets of representations of SL(2,F), for F a 2-adic field

The restriction of an irreducible representation of a reductive p-adic group to a sufficiently small open subgroup is governed by the geometry of nilpotent orbits in the dual of the Lie algebra, in a way made precise for local fields of characteristic zero by the analytic Harish-Chandra–Howe local character expansion. Henniart and Vignéras establish a representation-theoretic statement of this result for SL(2,F) that holds without restriction on the characteristic of F, nor on the ring over which we realize the representations. In prior work, we have proven a variant of this result over $\mathbb{C}$ for $p \neq 2$ and, in joint work with Zander Karaganis, for the case of depth-zero supercuspidal representations when $p = 2$.

In ongoing joint work with David Schwein, we connect the two approaches when $p = 2$ for wildly ramified irreducible supercuspidal representations of SL(2,F), where the key objects are the fascinating collections of representations whose L-packets have four elements. In this talk, we present our recent progress, focussing particularly on the case of 4-packet representations of $\mathrm{SL}(2, \mathbb{Q}_2)$.

NICK ROSENBLYUM, University of Toronto

THOMAS RUID, Massachusetts Institute of Technology