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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 $\mathrm{SL}(2, \mathbb{Q}_2)$.