On multiplicativity of gamma-factors and Fourier transforms via Braverman-Kazhdan program

Abstract:
This is a joint work with my student William Sokurski. Braverman-Kazhdan/Ngo program aims to generalize the work of Godement-Jacquet/Tate from GL(n) to an arbitrary reductive group G and a finite dimensional representation r of its L-group. We briefly review the general concepts of the method, including Renner's construction of reductive r-monoids, objects generalizing the space of n x n matrices in the case of GL(n), concluding with the example of symmetric power representations of GL(2,C).

We then define a space of r-Schwartz functions in terms of the restriction of the conjectural r-Fourier transform to the space of smooth functions of compact support in G, as in the work of Braverman and Kazhdan. Multiplicativity which states the equality of gamma factors for the parabolically induced and inducing data, follows from a natural commutativity of corresponding Fourier transforms on G and the Levi subgroup L, sharing the fixed maximal torus defining the monoid, with a generalized Harish-Chandra transform. We finally present a candidate for the Fourier transform attached to the symmetric cube of GL(2,C) as a fiber integration over the compact-inducing data for tamely ramified supercuspidals of GL(2) constructed by Howe and Bushnell-Kutzko, as predicted by Ngo. This last result is part of Sokurski’s thesis which can be extended to all the odd symmetric powers.

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