Whittaker functions for Steinberg representations of GL(n) over a p-adic field

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ABSTRACT

Let $G = GL_n(F)$ and let (π_{St}, V) be a (generalized) Steinberg representation of G. It is well known that the space of Iwahori fixed vectors in V is one dimensional. The Iwahori Hecke algebra acts on this space via a character. We determine the value of this character on a particular Hecke algebra element and use this action to determine in full the Whittaker function associated with an Iwahori fixed vector generalizing a result of Baruch and Purkait for $GL_2(F)$. This result is essentially a Casselman-Shalika formula analogue for Iwahori spherical vectors. We will demonstrate what this Whittaker function is explicitly and, time permitting, we will discuss how we can use it to compute the Whittaker function attached to a Steinberg representation of $SL_n(F)$.

This is joint work with Ehud Moshe Baruch.