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p-adic L-functions for $\mathrm{GSp}(4) \times \mathrm{GL}(2)$

Let p be an odd prime. In this talk we will construct a p-adic analog of a degree eight L-function $L(s, F \times f)$ where F is an ordinary holomorphic degree 2 Siegel eigen cusp form of level a power of p and f is an ordinary eigen cusp form of level a power of p.

Our method makes use of the work of M. Furusawa which gives an integral representation for this L-function. By suitably interpreting this integral representation in the context of inner products of automorphic forms, we show that it p-adically interpolates the L-values as the forms F and f vary in ordinary families (with the weights varying p-adically). This interpolation is carried out by constructing an Eisenstein measure on a higher-rank unitary group and exploiting a pull-back formula of P. Garrett and G. Shimura.