

Mini-course 3: “Higher Hida theory and p-adic L-functions for symplectic groups” (David Loeffler and Vincent Pilloni)

In the first two lectures, Loeffler will recall Hida’s theory of ordinary p-adic families of modular forms, and how it was used to construct p-adic Rankin–Selberg L-functions for $GL_2 \times GL_2$ (by Hida and Panchishkin), and triple-product L-functions for $GL_2 \times GL_2 \times GL_2$ (by Harris–Tilouine and Darmon–Rotger).

Then he will outline the key statements of Pilloni’s higher Hida theory for the symplectic group GSp_4 , which gives an analogous p-adic interpolation results for higher-degree coherent cohomology of Siegel three-folds, and describe how these techniques can be used to construct p-adic L-functions for GSp_4 , $GSp_4 \times GL_2$, and $GSp_4 \times GL_2 \times GL_2$, as in the recent preprint of Loeffler–Pilloni–Skinner–Zerbes.

In the third lecture, Pilloni will outline the proofs of the main theorems of higher Hida theory for GSp_4 , and describe work in progress to generalise these results to higher-rank symplectic groups.