

Hecke operators and measures on \mathbb{Z}_p

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Let $p > 2$ be a prime number, K an imaginary quadratic field where p splits and f a modular form of level not divisible by p . The theory of Serre-Tate allows to define canonically a power series expansion of f around a point x corresponding to an elliptic curve with CM in the field K with coefficients in the p -adic completion of L , hence a measure on \mathbb{Z}_p with values in a suitable p -adic field. Under some hypotheses on the point x we can compute the effect of the Hecke operator T_p on the expansion. When f is an eigenform we can establish a criterion for the non-vanishing of the p -th Hecke eigenvalue.