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Iwasawa invariants of nonordinary modular forms

This talk will outline a method for computing the (analytic) Iwasawa invariants of cuspidal newforms with $a_p = 0$ in terms of the associated sequence of Mazur-Tate elements. The connection between Mazur-Tate elements and p -adic L-functions is well-known for weight two modular forms, but the relation is less clear at higher weights. In the $a_p = 0$ case, we use Pollack's decomposition of the p -adic L-function to construct explicit lifts of Mazur-Tate elements to the full Iwasawa algebra. By studying the behavior of these lifts upon projection to layer n , we relate the Iwasawa invariants of Mazur-Tate elements to those of the corresponding p -adic L-functions. Corollaries include a relation between the Iwasawa invariants attached to certain p -congruent pairs of modular forms and a description of the p -adic valuation of critical L-values for modular forms with $a_p = 0$.