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Hirzebruch–Zagier cycles in p-adic families and adjoint L-values

Let E/F be a quadratic extension of totally real fields. The embedding of the Hilbert modular variety of F inside the Hilbert modular variety of E defines a cycle, called Hirzebruch–Zagier cycle. Thanks to work of Hida and Getz–Goresky, it is known that the integral of a Hilbert modular form g for E over this cycle detects if g is the base change of a Hilbert modular form for f, and in this case the value of the integral is related to the adjoint L-function of f. In this talk we shall present joint work with Antonio Cauchi and Marc-Hubert Nicole, where we show that the Hirzebruch–Zagier cycles vary in families when one considers deeper and deeper levels at p. We shall present applications to Λ-adic Hilbert modular forms and adjoint p-adic L-functions.