Hida families and rational points on elliptic curves. (A report on work in progress with Massimo Bertolini).

Let E be an elliptic curve over $\mathbf{Q}$ and let p be a prime of multiplicative reduction for E. To E is associated a weight two cusp form f on $\Gamma_0(Mp)$. Hida has shown that f fits into a p-adic family of cusp forms (of varying weights) and Mazur has associated to this family a two-variable p-adic L-function $L_p(k, s)$ whose "specialisation in weight two" $L_p(2, s)$ is the Mazur-Swinnerton-Dyer p-adic L-function attached to f.

I will present a formula which (in favorable circumstances) allows the construction of a global point on $E(\mathbf{Q})$ from the leading term of $L_p(k, s)$ at $(k, s) = (2, 1)$.

Time permitting, I hope to discuss an application of this formula to the theory of "Stark-Heegner points" attached to ring class fields of real quadratic fields, adapting a classical approach of Kronecker ("Kronecker's solution of Pell's equation") to this setting.