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Modular curves and isogeny graphs in Iwasawa towers

Let q be a prime number. Modular curves and supersingular isogeny graphs with q-power level structure encode arithmetic information in different ways. As we pass up the two towers, a precise connection emerges between their ordinary parts. I will describe how degeneracy maps define the operator U_q on both towers and how the ordinary projectors give control theorems. A comparison of the ordinary zeta factors then relates the two q-adic L-functions. I will explain this relation and how we prove a main conjecture for each tower. This is joint work with Katharina Müller.