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Congruences between pseudomeasures and Iwasawa theory

A refinement of the Main Conjecture of Iwasawa theory at an odd prime l has been formulated for Galois l-extensions K/k whenever k has finite degree over the rational number field and K has finite degree over its cyclotomic l-extension. Assuming that the mu-invariant of K/k is 0, it is known that this conjecture, up to its uniqueness assertion, is equivalent to two hypothetical congruences, one 'logarithmic', and the other 'torsion'. It had been expected that the logarithmic congruence would be more accessible than the torsion.

Recently, however, the torsion congruence has been proved in full generality. In fact, it follows quite naturally from the results of Deligne–Ribet interpreted in the pseudomeasure language of Serre.

This is joint work with J. Ritter.