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*Comparing the Iwasawa  $\mu$ -invariants of Selmer groups*

The main conjecture of Iwasawa theory is a conjecture on the relation between a Selmer group, which is a module over an (not necessarily commutative) Iwasawa algebra, and a conjectural  $p$ -adic L-function. This  $p$ -adic L-function is in turn expected to satisfy a conjectural functional equation in a certain sense. In view of the main conjecture and this functional equation, one would expect to have certain algebraic relationship between the Selmer group attached to a Galois representation and the Selmer group attached to the Tate twist of the dual of the Galois representation which can be thought as an algebraic manifestation of the functional equation. It is precisely a component of this algebraic relationship that this talk will cover. Namely, we will show that the Selmer group attached to a Galois representation and the Selmer group attached to the Tate twist of the dual representation have the same generalized Iwasawa  $\mu$ -variant. If time permits, we will also mention how the technique used in this study may also be applied to another context; namely, to compare the Iwasawa  $\mu$ -variant of Selmer groups of congruent Galois representations. This latter comparison is motivated by the philosophy that the main conjecture should be preserved under congruence.