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Congruences among automorphic forms on U(2,2) and the Bloch-Kato conjecture.

The Bloch-Kato conjecture predicts a precise relationship between an L-value attached to a motif and the order of its Selmer group. The aim of this talk is to give evidence for this conjecture in the case of adjoint motives of modular forms. More precisely, for an odd prime ℓ we will show how to relate the ℓ-adic valuation of $L^{\mathrm{alg}}(Sym^2 f, k)$ to the ℓ-adic valuation of $\#\mathrm{Sel}(\mathrm{ad}^0\rho_f(-1))^\vee$, where f is a modular form (of certain level and weight $k-1$) and ρ_f is the ℓ-adic Galois representation attached to f. Our approach is a variation of a method first used by Ribet (1976) and later developed by Wiles (1990) and Skinner-Urban (2002) in the sense that to achieve our goal we introduce an intermediate step and construct congruences between two different kinds (CAP and non-CAP) of automorphic forms on the quasi-split unitary group $U(2,2)$. (Received February 19, 2007)