The Compatibility of the Conjecture of Birch and Swinnerton-Dyer with Schur Indices

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The famed conjecture of Birch and Swinnerton-Dyer relates the rank of an elliptic curve $E/\mathbb{Q}$ to the order of vanishing of its L-function. Moreover, to any number field K we may associate a rational representation ρ on $E(K)$ and let τ be any Artin representation whose kernel contains the absolute Galois group of K.

Then, in conjunction with a conjecture of Deligne-Gross, the order of vanishing of the twisted L-function should equal the multiplicity of τ in ρ. We shall examine the compatibility of these conjectures with the theory of Schur indices with an approach via root numbers.