Mazur, Barry; **Rubin, Karl**
Finding large Selmer rank via an arithmetic theory of local constants. (English)
Zbl 1219.11084
Ann. Math. (2) 166, No. 2, 579-612 (2007).

Summary: We obtain lower bounds for Selmer ranks of elliptic curves over dihedral extensions of number fields.

Suppose K/k is a quadratic extension of number fields, E is an elliptic curve defined over k, and p is an odd prime. Let $\mathcal{K}^-$ denote the maximal abelian p-extension of K that is unramified at all primes where E has bad reduction and that is Galois over k with dihedral Galois group (i.e., the generator c of $\mathrm{Gal}(K/k)$ acts on $\mathrm{Gal}(\mathcal{K}^-/K)$ by inversion). We prove (under mild hypotheses on p) that if the $\mathbb{Z}_p$-rank of the pro-p Selmer group $\mathcal{S}_p(E/K)$ is odd, then $\mathrm{rank}_{\mathbb{Z}_p}\mathcal{S}_p(E/F) \geq [F:K]$ for every finite extension F of K in $\mathcal{K}^-$.

MSC:

11G05	Elliptic curves over global fields
11G40	L-functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture
11R23	Iwasawa theory

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