Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-11-930 **Sungkon Chang*** (`schang@math.uga.edu`), 2360 W. Broad St., Q-5, Athens, GA 30606. *On the rank of quadratic twists of an elliptic curve.*

Let K be the field of rational numbers, or a number field of odd class number without real embeddings, or the function field $\mathbb{F}_\ell(t)$ where ℓ is an odd prime. Let E/K be an elliptic curve, and let $s_E(D)$ denote the number of elements in the 2-Selmer group of the quadratic twists E_D for $D \in K^*$. In this paper, we show that if E/K does not have a rational 2-torsion point, then there is a set of prime ideals $\mathcal{D}$ with positive Dirichlet density such that $s_E(D) = s_E(1)$ whenever D is a *hyperprimary* element of $\mathcal{O}_K$ divisible only by primes contained in $\mathcal{D}$. When $K = \mathbb{Q}$, it implies that there is a positive constant $\epsilon < 1$ such that $\#\,\{|D| < X : s_E(D) = s_E(1)\} \gg_{E,\epsilon} X/(\log X)^\epsilon$ for all sufficiently large X. (Received October 01, 2004)