

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

**Bounds on the Mordell-Weil rank  
of elliptic curves  
over imaginary quadratic number fields  
with class number 1**

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Monday, November 12 at 4:15 pm  
111 Cummington Mall, MCS B21  
Tea and cookies in MCS 144 at 4:00 pm

**Abstract:** We generalize the lemmas of Thomas Kretschmer to arbitrary number fields, and apply them with a 2-descent argument to obtain bounds for families of elliptic curves over certain imaginary quadratic number fields with class number 1. One such family occurs in the congruent number problem. We consider the congruent number problem over these quadratic number fields, and subject to the finiteness of Sha, we show that there are infinitely many numbers that are not congruent over  $\mathbb{Q}$  but become congruent over  $\mathbb{Q}(\zeta_3)$ .