1047-11-445 **Xander Faber** and **Benjamin Hutz\*** (`bhutz@amherst.edu`), Dept. of Mathematics & Computer Science, Amherst College, Box 2239, P.O. 5000, Amherst, MA 01002. *On the Number of Rational Pre-Images of the Origin Under Quadratic Dynamical Systems.*

We study the number of rational pre-images of a rational number $a$ under the quadratic polynomial map $f_c(x) = x^2 + c$. We state the existence of a uniform bound (uniform over the family of maps $f_c(x)$) on the number of rational pre-images. We determine conditionally an explicit bound on the number of $\mathbb{Q}$-rational pre-images for $a = 0$ and $c \in \mathbb{Q}$. This uses methods from rational points on curves, Falting's Theorem, height functions, and the theory of elliptic curves. (Received February 03, 2009)