1047-11-73 **Robert L. Benedetto*** (rlb@cs.amherst.edu), Dept of Mathematics, Amherst College, Amherst, MA 01002. *(Non)-uniform bounds for rational preperiodic points in arithmetic dynamics.*

Let K be a global field, and let $f(z) \in K(z)$ be a rational function defined over K of degree at least two. Clearly f maps K-rational points to K-rational points. In 1950, Northcott proved that f has only finitely many K-rational preperiodic points. In fact, Northcott's result holds for morphisms of $\mathbb{P}^N$ for arbitrary dimension N. In 1994, Morton and Silverman formulated their broad Dynamical Uniform Boundedness Conjecture, stating that the number of K-rational preperiodic points in K is bounded by a constant depending only on K, the degree of f, and the dimension N. In this expository talk, we will describe various partial results and non-uniform bounds proven in the past fifteen years, especially in the case that f is a polynomial. (Received January 14, 2009)