FINITENESS THEOREMS AND AVERAGES IN ARITHMETIC DYNAMICS

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Over a number field K, a celebrated result of Silverman states that if $\phi \in K(x)$ is a rational function whose second iterate is not a polynomial, then the set of integral points in the orbit $\mathcal{O}_\phi(b) = \{\phi^n(b)\}_{n \geq 0}$ is finite for all basepoints in projective space. In this talk, we study the "average" number of integral points in orbits, and we use this to shed light on certain prime factorizations problems in dynamics.