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A lower bound on the canonical height for polynomials

Let K be a number field. The canonical height function $\hat{h}_\phi$ associated to a rational function $\phi : \mathbb{P}^1(K) \to \mathbb{P}^1(K)$ measures arithmetic information about the forward orbits of points under ϕ. Silverman conjectured that for a given number field K and $d \geq 2$, there exist constants $\kappa_1 > 0$ and κ_2 such that for all degree d rational maps $\phi \in K(z)$ and all $\alpha \in K$, either α is preperiodic under ϕ, or $\hat{h}_\phi(\alpha) \geq \kappa_1 h_{\mathcal{M}_d}(\phi) + \kappa_2$, where $h_{\mathcal{M}_d}$ is a height on the moduli space $\mathcal{M}_d$ of degree d rational functions. We will discuss a proof of such a uniform lower bound across large classes of polynomials.