

1163-11-553

Alexander J Carney* (alexanderjcarney@rochester.edu). *Heights, dynamics, and isotriviality over finitely generated fields.*

Expanding on work of Moriwaki and Yuan-Zhang, we show how to define vector-valued arithmetic intersections and heights relative to any finitely generated field extension K/k . When $K = \mathbb{Q}$ or K/k has transcendence degree one, these reproduce the usual number field and geometric heights, respectively. Letting X be a projective variety over K , we prove that these heights have a Northcott property, provided either that $k = \mathbb{Q}$ or \mathbb{F}_q , or that X is *totally non-isotrivial* over k , a necessary condition which is slightly stronger than not *isotrivial*. This generalizes previous work of Baker, Chatzidakis-Hrushovski, and the Lang-Néron Theorem. Now let $f, g : X \rightarrow X$ be two polarizable dynamical systems on X . Using the above vector-valued intersections and the Northcott property for heights, we prove the following rigidity theorem for preperiodic points: If $\text{Prep}(f) \cap \text{Prep}(g)$ is Zariski dense in X , then $\text{Prep}(f) = \text{Prep}(g)$. By the Lefschetz principle, this holds over any field. (Received September 10, 2020)