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Rafe Jones* (rfjones@carleton.edu) and **Wade Hindes**. *Primitive prime divisors in polynomial orbits over function fields.*

We prove, for a large class of polynomials defined over a function field K of any characteristic, that an infinite orbit must have only finitely many terms without a primitive prime divisor. The key step is to show that points in backwards orbits cannot satisfy certain first-order differential equations known as Riccati equations. As an application, we study the arboreal representation of some families of non-isotrivial polynomials over function fields of characteristic p , and show in some cases their image has finite index in the automorphism group of the appropriate rooted tree. These are the first large-image examples we know of in the characteristic p , non-isotrivial case. (Received February 19, 2018)