

**Hamblen, Spencer; Jones, Rafe; Madhu, Kalyani**

**The density of primes in orbits of  $z^d + c$ .** (English) Zbl 1395.11128  
*Int. Math. Res. Not.* 2015, No. 7, 1924-1958 (2015).

Summary: Given a polynomial  $f(z) = z^d + c \in K[z]$  over a global field  $K$  and  $a_0 \in K$ , we study the density of prime ideals of  $K$  dividing at least one element of the orbit of  $a_0$  under  $f$ . We show that for many choices of  $d$  and  $c$  this density is zero for all  $a_0$ , assuming  $K$  contains a primitive  $d$ th root of unity. The proof relies on several new results, including some giving criteria to ensure the number of irreducible factors of the  $n$ th iterate of  $f$  remains bounded as  $n$  grows, and others on the ramification above certain primes in iterated extensions. Together these allow for nearly complete information when  $K$  is a global function field or when  $K = \mathbb{Q}(\zeta_d)$ .

**MSC:**

- 11R45** Density theorems
- 11R09** Polynomials (irreducibility, etc.)
- 11R58** Arithmetic theory of algebraic function fields

Cited in **1** Review  
Cited in **15** Documents

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