

1135-11-1078 **Xander Faber*** (awfaber@super.org). *The arithmetic of Newton's method.*

Fix a squarefree polynomial $f(z)$ with rational coefficients. The familiar Newton map

$$N(z) = z - \frac{f(z)}{f'(z)}$$

is a rational function with super-attracting fixed points at the roots of f . For a general choice of rational number x , consider the set of primes p for which the Newton sequence $x, N(x), N^2(x), \dots$ converges p -adically to a root of f . Felipe Voloch and I conjectured that this set has density zero in 2010. I will sketch a recent proof of the first nontrivial case of this conjecture, namely for the polynomial $f(z) = -2z^3 + 3z^2$. (Received September 19, 2017)