XANDER FABER, McGill University, Montreal, QC
Prime Factors of Dynamical Sequences

Let $\phi(t) \in \mathbb{Q}(t)$ be a rational function of degree at least 2. For a given rational number x_0, define $x_{n+1} = \phi(x_n)$ for each $n \geq 0$. If this sequence is not eventually periodic, then $x_{n+1} - x_n$ has a primitive prime factor for all sufficiently large n. This result provides a new proof of the infinitude of primes for each rational function ϕ of degree at least 2.

I will present the above result, along with some interesting refinements. I will also give a geometric description that suggests a question about dynamics in higher dimensions.

This is joint work with Andrew Granville.