

Exposé court

94 **Arithmetic dynamics of unicritical polynomials: a study on rational periodic points**

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Arithmetic dynamics is a fascinating interdisciplinary field that combines the study of dynamical systems, number theory, and algebraic geometry. This area of research investigates the properties of discrete dynamical systems arising from arithmetic objects, such as rational maps, as well as the behavior of number-theoretic quantities under iteration.

In this presentation, we will delve into arithmetic dynamics, with a particular focus on period 2 for the unicritical polynomial $f_{d,c}(x) = x^d + c$, where d is an integer larger than two. We will explore the rational periodic points of the polynomial within the field of rational numbers. Our investigation will encompass periodic points for degrees $d = 4$ and $d = 6$, and we will present evidence supporting the absence of rational periodic points with an exact period of two for $d = 2k$, under the conditions that $3 \mid 2k - 1$ and k contains a prime factor greater than three.