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p-Adic interpolation of orbits under rational maps

Rivera-Letelier's characterization of possible analytic uniformizations of p-adic analytic maps has played an important role within arithmetic dynamics over the past fifteen years. The characterization is given by a trichotomy of indifferent, attracting and superattracting cases near a fixed point of a map.

In this talk, we present that if we are only interested in the orbit of a rational map on a point c of $\mathbb{P}^1$ over a characteristic zero global field, we could always p-adically interpolate the orbit in the sense similar to the indifferent case of the trichotomy. This is done by working with a finitely generated field extension of $\mathbb{Q}$ and choosing suitable primes for embedding into local fields. We also present an application to the dynamical Mordell-Lang conjecture.

This project is a joint work with Prof. Jason P. Bell (arxiv: 2202.01673).