

Speaker: Alon Levy

Title: Attracting Points and Critical Orbits in Non-Archimedean Dynamics

Abstract: It is a classical result that over the complex numbers, whenever a rational function ϕ has a fixed point that is attracting but not superattracting, that is a fixed point z with $0 < |\phi'(z)| < 1$, there is a critical point of ϕ whose orbit is attracted to z . We use Berkovich spaces to prove a similar result over non-archimedean fields. This has several major applications. First, it can bound the height of a post-critically finite map as a point in the moduli space of morphisms over $\overline{\mathbb{Q}}$. Second, it proves that, over non-archimedean fields of characteristic 0 or larger than d , a map of degree d has at most $2d - 2$ attracting periodic cycles. Third, it is a step toward generalizing results about the structure of post-critically finite maps over the complex numbers to fields of positive characteristic, such as Thurston's Rigidity.