RALUCA TANASE, SUNY Stony Brook

Semi-parabolic tools for hyperbolic Hénon maps

We discuss some new continuity results for the Julia sets J and J^+ of a complex Hénon map $H_{c,a}(x,y) = (x^2 + c + ay, ax)$. We look at the parameter space $\mathcal{P}_{(1+t)\lambda} \subset \mathbb{C}^2$ of Hénon maps which have a fixed point with one eigenvalue $(1+t)\lambda$, where $\lambda = e^{2\pi ip/q}$ and $t \geq 0$ is sufficiently small. The Hénon map has a semi-parabolic fixed point when $t = 0$ and we use techniques that we have developed for the semi-parabolic case to describe nearby perturbations for positive t. We prove that the parametric region $\{(c,a) \in \mathcal{P}_\lambda : |a| < \delta\}$ of semi-parabolic Hénon maps lies in the boundary of a hyperbolic component of the Hénon connectedness locus. We show that for $0 < |a| < \delta$ and $(c,a) \in \mathcal{P}_{(1+t)\lambda}$, the sets J and J^+ depend continuously on the parameters as $t \to 0^+$. These results can be regarded as a two-dimensional analogue of radial convergence for polynomial Julia sets. This is joint work with Remus Radu.