

Application of the Ahlfors 5 Island Theorem in complex dimension 2

John Erik Fornæss
Norwegian University of Science and Technology

The function $f(z) = z^k$ has the following property on the unit circle: The distance $d(f(p), f(q)) = kd(p, q)$ so is multiplied by k for nearby points p, q . We say that f has entropy $\log k$. In general a polynomial $f(z)$ of degree k has entropy $\log k$. Going to two dimensions, Smillie proved in 1990 that the Henon map $F(z, w) = (f(z) + w, z)$ has entropy $\log k$ if $f(z)$ is a polynomial of degree k . It is natural to think then that if $f(z)$ is an entire transcendental function, then the entropy of F should be infinite. Indeed this is the case. The key tool is the Ahlfors 5 Island Theorem. This is work in progress together with Leandro Arosio, Anna Miriam Benini and Han Peters.
