

Meeting: 1003, Atlanta, Georgia, SS 33A, AMS Special Session on Topics in Geometric Function Theory, I

1003-30-843 **Rich L Stankewitz*** (rstankewitz@bsu.edu), Dept. of Math. Sciences, Ball State University, Muncie, IN 47306, and **Hiroki Sumi** (sumi@math.titech.ac.jp), Tokyo Institute of Technology, O-Okayama, Meguro-ku, 152-8551 Tokyo, Japan. *Dynamics and Structure of Julia sets of polynomial semigroups with bounded finite postcritical set.*

The maps $f_c(z) = z^2 + c$ for c in the Mandelbrot set are such that the critical orbit $\{f_c^n(0)\}$ is bounded, which in turn leads to many important dynamic and structural properties. We look at the more general situation of polynomial semigroups with bounded postcritical set. More precisely, let G be a semigroup of complex polynomials (under the operation of composition of functions) such that there exists a bounded set in the plane which contains any finite critical value of any map $g \in G$. We discuss the dynamics of such polynomial semigroups as well the structure of the Julia set of G (the set of points where G fails to be a normal family). In general, the Julia set of such a semigroup G may be disconnected, and each Fatou component of such G is either simply connected or doubly connected. In this talk, we present that for any two doubly connected components of the Fatou set, the boundaries are separated by a Cantor set of quasicircles inside the Julia set of G . Furthermore, we provide results concerning the (semi) hyperbolicity of such semigroups as well as discuss various topological consequences of the postcritically boundedness condition. (Received September 30, 2004)