Meeting: 1006, Lubbock, Texas, SS 7A, Special Session on Topology of Dynamical Systems

1006-30-196 **John C Mayer*** (mayer@math.uab.edu), Department of Mathematics - UAB, Birmingham, AL 35294-1170. *Siegel and Cremer building blocks for polynomial Julia sets.* Preliminary report.

Suppose that J is the connected Julia set of a polynomial P of degree $d \geq 2$. For simplicity, let 0 be a fixed irrationally indifferent point of P with derivative $\exp(2\pi i\theta)$. If P is linearizable at 0 we are in the *Siegel case* and there is a maximal disk Δ of linearizability with boundary S. If P is not linearizable at 0, we are in the *Cremer case*, and set $S = \{0\}$. We make a topological assumption about J: assume J is hereditarily decomposable (this can be weakened).

On the circle of prime ends (external rays) of J, consider the map $\sigma_d : \mathbb{S}^1 \to \mathbb{S}^1$ defined by $\sigma_d(t) = t \pmod 1$. We investigate the connection between an invariant Cantor set C in the circle of prime ends with a well-defined irrational rotation number θ under $\sigma_d|_C$ and an invariant nowhere dense (in J) continuum $B \supset S$ which we call the Siegel (respectively, Cremer) *building block* of J associated with the irrationally indifferent fixed point 0. (B is defined by prime end impressions.) The issue is complicated by the fact that for degree $d > 2$, there are uncountably many Cantor sets in $\mathbb{S}^1$ with rotation number θ. (Received February 14, 2005)