MSRI - Complex Dynamics

Dynamics in Several Complex Variables

Liz Vivas
Assoc. Professor
Ohio State University

Inspiration:

Fatou-Bieberlach Domains

$\Omega \subsetneq \mathbb{C}^n \quad ; \quad n \geq 2$

$\exists\, F : \mathbb{C}^n \to \Omega$ injective hol. s.t. $F(\mathbb{C}^n) = \Omega$

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Complex Dynamics:

Given $\Phi \in \mathrm{Aut}(\mathbb{C}^n)$, $\Phi(0) = 0$; Φ attracting at $0 \in \mathbb{C}^n$

$\Rightarrow \mathcal{B} = \{ p \in \mathbb{C}^n$ s.t. $\Phi^n(p) \to 0 \}$ is bihol. to $\mathbb{C}^n$.

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Questions:
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  e.g. $\Phi(0) = 0$ & $D\Phi(0) = \mathrm{Id}$. Is $\mathcal{B} \cong \mathbb{C}^n$??
- Local Dynamics of maps like this.

  parabolic curves, parabolic domains, ...

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non-autonomous or random composition of Moebius transformations "models" $\leftrightsquigarrow$ dynamics of maps in $\mathbb{C}^2$

$\rightsquigarrow$ orthogonal polynomials