UNIVALENT WANDERING DOMAINS IN THE EREMENKO–LYUBICH CLASS

By

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Abstract.
We use the Folding Theorem of [Bis15] to construct an entire function f in class $\mathcal{B}$ and a wandering domain U of f such that f restricted to $f^n(U)$ is univalent, for all $n \geq 0$. The components of the wandering orbit are bounded and surrounded by the postcritical set.

1 Introduction

We consider the dynamical system formed by the iterates of an entire map $f : \mathbb{C} \to \mathbb{C}$. We will consider only **transcendental** f, namely those maps f with an essential singularity at ∞. Such dynamical systems appear naturally as complexifications of one-dimensional real-analytic systems (interval maps or circle maps for instance), or as restrictions of analytic maps of $\mathbb{R}^{2n}$ to certain invariant one complex-dimensional manifolds.

The dynamics of f splits the complex plane into two complementary and totally invariant sets: The **Fatou set** (or **stable set**), where the iterates form a normal family, and its closed complement, the **Julia set**, $J(f)$, often a fractal formed by chaotic orbits. The Fatou set is open and is generally composed of infinitely many connected components, known as **Fatou components**, which map among each other under the function f.

It was already Fatou [Fat20] who gave a complete classification of periodic Fatou components in terms of the possible limit functions of the sequence of iterates. His classification theorem states that an invariant Fatou component is either an **immediate basin of attraction** of an attracting or parabolic fixed point; or a **Siegel disk**, i.e., a topological disk on which f is conformally conjugate to a rigid irrational rotation; or a **Baker domain** if the iterates converge uniformly

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