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RESULTS AND QUESTIONS ON BURIED POINTS OF JULIA SETS

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The *residual Julia set* of a complex analytic function (rational, entire, or meromorphic) is defined as its Julia set (unstable set, chaotic set) minus the boundaries of its Fatou components (stable set, set of normal points). The residual Julia set is also called the set of *buried points*. It is not hard to see that, when a component of the Fatou set is fully invariant under some power of a rational map, as with the basin of attraction of infinity for a polynomial, the residual Julia set is empty. Among connected Julia sets, there are examples where the residual Julia set is homeomorphic to the irrational numbers, and others where it is homeomorphic to the “irrational” points of the Sierpinski universal plane curve (Sierpinski carpet). Such examples occur for instance in the family

$$z \mapsto z^3 + \frac{\lambda}{z^3}.$$

We will discuss recent progress on open questions, both topological and dynamical, concerning residual Julia sets, and where progress remains to be made.

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