Topological properties versus computational complexity of Julia sets

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This talk is based on joint work with Mark Braverman. Informally, a compact subset of the plane is computable if there exists an algorithm to visualize it with an arbitrary precision. We have recently showed that there exist computable quadratic polynomials with non-computable Julia sets. In this talk I will discuss what we know about the topological structure of such Julia sets, and pose some open questions on the interplay of topological and computational complexity.