COLLOQUIUM

Non-accessible Critical Points of Some Rational Functions with Cremer Points

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Abstract

Complex dynamics is the study of evolution of points on the Riemann sphere under iteration of a complex rational function. For each function, the Riemann sphere is divided into the Fatou set (on which the dynamics are stable), and its complement, the Julia set (on which the dynamics are chaotic).

When the Julia set is locally connected, all its points are accessible from the Fatou set. When the Julia set fails to be locally connected, it is interesting to determine which points in the Julia set are accessible from the Fatou set, and which are not.

Cremer fixed points are irrationally indifferent fixed points in the Julia set. In 2000, Kiwi has shown that, in the case of polynomials, the presence of a Cremer fixed point having the small cycles property implies the non-accessibility of a critical point in the Julia set. We extend Kiwi's results and show that the same is true for rational functions that have a completely invariant attracting Fatou component.

Department of Mathematics

Thursday, November 12, 2009
4:00 p.m.
204 Morgan Hall

Refreshments will be served at 3:45 p.m.

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