Seminar in Nonlinear Systems

Scott Sutherland

Institute for Mathematical Sciences
State University of New York at Stony Brook

Guaranteed convergence of Newton's method on complex polynomials

Thursday, April 17, 2003
3:30 pm
Morton 101

Abstract: For every polynomial of fixed degree d, there is a universal set of starting points for Newton's method that can be used to locate all of its roots. The cardinality of this set can be as small as $1.11\,d\log^2 d$, and we construct it explicitly. This result follows from an analysis of the dynamics of Newton's method viewed as an iterated rational map on the Riemann Sphere.

This is joint work with John Hubbard and Dierk Schleicher.

Scott Sutherland is an Associate Professor of Mathematics at the Institute for Mathematical Sciences at the State University of New York at Stony Brook. He received a Ph.D. from Boston University and a B.A. from Pomona College in Claremont, California. Dr. Sutherland has been at Stony Brook since 1990. Prior to receiving his Ph.D., Dr. Sutherland worked for a number of companies in and around Boston, including positions with the Boston Company/Shearson/Amex, Chase Manhattan Bank, the Commonwealth of Massachusetts, and his own company, Manifold Inc. During part of 2001 he took time off from his position at Stony Brook to do parallel programming for Neutility Corporation.

Refreshments at 3:15pm

For additional information contact Marco Lenci at 201-216-5453.