APPLIED MATHEMATICS

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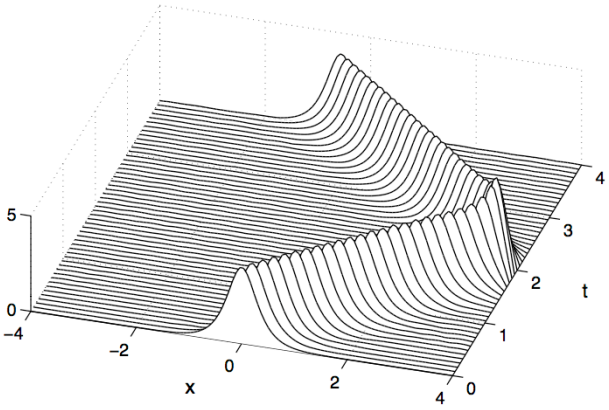
CHEBFUNS: A NEW KIND OF NUMERICAL COMPUTING

(4 p.m. Guggenheim 220 – reception to follow)

Abstract: Chebfuns represent a new kind of computing that aims to combine the feel of symbolics with the speed of numerics. The idea is to represent functions by piecewise Chebyshev expansions whose length is determined adaptively to maintain an accuracy of close to machine precision. The software is implemented in object-oriented Matlab, with familiar vector operations such as sum and diff overloaded to analogues for functions such as integration and differentiation, and the chebop extension solves linear ordinary differential equations by typing a backslash. This is joint work with others including Zachary Battles, Folkmar Bornemann, Toby Driscoll, Ricardo Pachon, and Rodrigo Platte.



Nick Trefethen is Professor of Numerical Analysis and head of the Numerical Analysis Group at Oxford University. A Fellow of the Royal Society and a member of the National Academy of Engineering, he is known for books, articles, and software in areas including numerical linear algebra, transition to turbulence, approximation of functions, numerical conformal mapping, and spectral methods for partial differential equations.