APPLIED MATHEMATICS COLLOQUIUM

SPEEDING UP NUMERICAL COMPUTATIONS
VIA CONFORMAL MAPS

L. NICK TREFETHEN
Oxford University

ABSTRACT:

Conformal mapping is not the tool most numerical analysts reach for first; indeed many numerical analysts are uncomfortable in the complex plane. Yet by considering a few elementary conformal maps and their use for transplanting problems from one domain to another, one can produce powerful numerical algorithms. This talk will present several examples:

- A new formula for quadrature on an interval
  [joint work with Nick Hale]

- Tanh and DE quadrature with endpoint singularities
  [Takahasi & Mori et al.]

- Adaptive spectral methods for PDEs
  [joint work with Wynn Tee]

- Evaluation of functions of matrices and operators
  [joint work with Nick Higham]

- Talbot contours for inverse Laplace transforms
  [joint work with Andre Weideman]

MONDAY, DECEMBER 11, 2006
4:30 PM
Building 2, Room 105

Refreshments at 4:00 PM in Building 4, Room 174
(Math Majors Lounge)