



Announcing

A COS 740 Seminar

Friday, January 25, 2008 at 2:00 pm

SH 303

at The University of Southern Mississippi

Speaker: C.C. Tsai

Department of Information Technology
Toko University

**Title: Particular solutions of Chebyshev polynomials
for polyharmonic and poly-Helmholtz equations**

Abstract:

Analytical particular solutions are obtained for the polyharmonic and the products of Helmholtz-type partial differential operators with Chebyshev polynomials at right-hand side. The solutions can be written explicitly in terms of either monomial or Chebyshev bases. By using these formulas, we can obtain the approximate particular solution when the right-hand side has been represented by a truncated series of Chebyshev polynomials. These formulas are further implemented to solve inhomogeneous partial differential equations (PDEs) in which the homogeneous solutions are complementarily solved by the method of fundamental solutions (MFS). Numerical experiments, which include fourth order PDEs and three-dimensional cases, are carried out. Due to the exponential convergence of the Chebyshev interpolation and the MFS, our numerical results are extremely accurate.

Further Information

Further details and information about this and other departmental activities is available online at http://www.math.usm.edu/bulletin_board/.