Speaker: David Kaminski

High-Precision Approximation Solutions to Differential Equations

Room: A 580  
Date: 31 Oct 2003  
Time: 3:00--4:00

Department of Mathematics  
Simon Fraser University & Pacific Institute for the Mathematical Sciences

Title: SPECTRAL DIFFERENCING WITH A TWIST

Date: Friday August 8th, 2003

Time: 11:00A.M. - 12:00

Room: C630

Abstract: Spectral collocation methods have become very useful in providing highly accurate
solutions to differential equations. A straightforward implementation of these methods involves the use of spectral differentiation matrices. To obtain optimal accuracy these matrices must be computed carefully. We demonstrate that naive algorithms for computing these matrices suffer from severe loss of accuracy due to roundoff errors. Several improvements are analyzed and compared. A number of numerical examples are provided, demonstrating significant differences between the sensitivity of the forward problem and inverse problem.

ALL ARE WELCOME