Temple University Mathematics Colloquium

Eric de Sturler

Virginia Tech

will speak on

Fast Solvers for Sequences of Linear Systems Arising in Acoustics

ABSTRACT: In acoustics simulations we need to solve a long sequence of large, sparse, linear systems arising from finite element discretization. Both the matrices and right hand right sides vary slowly with the frequency, and we need to solve for a large number of frequencies. As the frequency increases the linear systems are increasingly hard to solve. However, we have developed methods that exploit the slow variation of systems in a sequence of systems to drastically reduce the overall solution cost. I will introduce the underlying mathematics of iterative linear solvers, the technique of 'recycling search spaces' for successive systems, and show results for the problem of tire-noise.

This is a collaboration with Jan Biermann, TU Hamburg-Harburg.

Monday, 7 February 2011
Lecture at 4:00 pm
Coffee, tea, and refreshments from 3:30-5:00 pm
Room 617, Wachman Building
Department of Mathematics