Department of Computer Science
University of Houston
Seminar Spring 2011

WHEN: WEDNESDAY, FEBRUARY 2, 2011
WHERE: PGH 232
TIME: 11:00 AM

SPEAKER: Dr. Michael A. Heroux, Sandia National Laboratories

Host: Dr. Barbara Chapman

Title: Numerical Linear Algebra Opportunities on Scalable Manycore Systems

Abstract:
For decades, parallel computing has been the focus of intense research and development in selected fields, and numerous large-scale parallel applications have been developed. SPMD via MPI has been a dominant approach to exploiting parallelism to date, but this approach alone will be insufficient going forward. Presently we are on the threshold of mass deployment of parallelism across most application areas, but the path to developing these applications is uncertain. There are many programming models, languages and architectures from which to pick, and the number of choices is growing.   In this presentation we discuss some of the principles of parallel application development that have produced today's codes, and how we can address these principles going forward. We also discuss what change is needed in order to move forward and give ideas for developing parallel applications now that will have sustained value in the future.

Biography:
Dr. Michael A. Heroux is a Distinguished Member of the Technical Staff at Sandia National Laboratories, working on new algorithm development, and robust parallel implementation of solver components for problems of interest to Sandia and the broader scientific and engineering community. He leads development of the Trilinos Project, an effort to provide state of the art solution methods in a state of the art software framework. Trilinos is a 2004 R&D 100 award-winning product, freely available as Open Source and actively developed by dozens of researchers.

In addition to Trilinos, Dr. Heroux works on the development of scalable parallel scientific and engineering applications and maintains his interest in the interaction of scientific/engineering applications and high performance computer architectures. He leads the Mantevo project, which is focused on the development of Open Source, portable mini-applications and mini-drivers for scientific and engineering applications. Dr. Heroux is a remote worker for Sandia, maintaining an office at home in rural central Minnesota and at St. John's University where he is scientist in residence in the Computer Science Department.