

APPLIED MATHEMATICS COLLOQUIUM

CHALLENGES IN COMBINATORIAL SCIENTIFIC COMPUTING

Professor John R. Gilbert

University of California at Santa Barbara

ABSTRACT:

Computation on large combinatorial structures -- graphs, strings, partial orders, etc. -- has become fundamental in many areas of data analysis and scientific modeling. The field of high-performance combinatorial computing, however, is in its infancy. By way of contrast, in numerical supercomputing we possess standard algorithmic primitives, high-performance software libraries, powerful rapid-prototyping tools, and a deep understanding of effective mappings of problems to high-performance computer architectures.

This talk will describe several challenges for the field of combinatorial scientific computing in algorithms, tools, architectures, and mathematics. I will draw examples from several applications, and I will highlight our group's work on high-performance implementation of algebraic primitives for computation on large graphs.

MONDAY DECEMBER 8TH 2008

4:30 PM

Building 4, Room 231

*Refreshments at 4:00 PM in Building 2, Room 349
(Applied Math Common Room)*

Applied Math Colloquium: <http://www-math.mit.edu/amc/fall08>

Math Department: <http://www-math.mit.edu>



Massachusetts Institute of Technology
Department of Mathematics
Cambridge, MA 02139