The School of Natural Sciences Presents

Applied Math Seminar:

An Elimination Game – Old and New

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ABSTRACT:
Sparse matrix problems arise at the heart of many large-scale scientific and engineering applications. State-of-the-art algorithms for solving these problems not only numerical techniques, but they may also require knowledge of data structures, graph theory, algorithm design, complexity analysis and computer architectures. This is particularly true for factorization-based algorithms, such as those for solving sparse systems of linear equations, in which the nonzero entries of a matrix are eliminated according to certain prescribed rules. However, the order in which the nonzero entries are eliminated can have a dramatic effect on the overall performance of the solution process. This is referred to as the ordering problem. In this talk, an overview of the ordering problem will be presented. In particular, previously known results and some recent work will be described.

BIOGRAPHY:
Esmond G. Ng received his Ph.D. in Computer Science from the University of Waterloo, Ontario, Canada. He is currently a senior scientist in the Computational Research Division at Lawrence Berkeley National Laboratory (LBNL). Prior to joining LBNL, Ng was a senior research staff member in the Computer Science and Mathematics Division at Oak Ridge National Laboratory (ORNL). While he was at ORNL, he was also an Adjunct Professor in the Department of Computer Science at the University of Tennessee, Knoxville. Ng is well known for his work on sparse matrix computation. The algorithms and codes that he has developed are widely used. His research also includes numerical linear algebra, graph algorithms, parallel computing and mathematical software development and software engineering. In addition, he is interested in applying sparse matrix techniques to scientific and engineering applications.

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