Matrix Computations and Scientific Computing Seminar

Organizer: Jim Demmel and Ming Gu

Wednesday, 12:00–1:00 pm, 380 Soda Hall

Sep 16 **Ming Gu**, UC Berkeley

Spectrum-revealing Matrix Factorizations

Low-rank matrix approximations have become of central importance in the era of big data. Efficient and effective methods for such approximations have been proposed in statistics, theoretical computer science, and optimization. In this talk, we give an overview of our work on spectrum-revealing matrix factorizations, a new framework for efficient and effective matrix approximations. These factorizations are variations of the more classical LU, QR, and Cholesky factorizations with row (and/or) column permutations. We develop new theory for the quality and algorithms for the efficient computations of these factorizations, demonstrating their competitiveness against the best matrix approximation methods in both theory and computational effectiveness.