

# Matrix Computations & Scientific Computing Seminar

Organizer: James Demmel & Ming Gu

Wednesday, 11:00AM–12:00Noon, 380 Soda

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Dec. 4      **Chris Melgaard**, UC Berkeley

*An efficient randomized GECP algorithm*

Gaussian Elimination with partial pivoting (GEPP) is among the most widely used methods for solving linear systems of equations. However, this method is known to fail for matrices that induce large element growth within the corresponding matrix. To address this issue in a computationally efficient manner, we propose a new pivoting scheme called randomized complete pivoting. We show that randomized complete pivoting gives a reliable (but randomized) insurance policy against unwanted element growth for negligible amounts of additional computation. With high probability, this method gives GECP (Gaussian Elimination with complete pivoting) style element growth bounds with computational performance similar to GEPP.