

Matrix Computations & Scientific Computing Seminar

Organizer: James Demmel & Ming Gu

Wednesday, 11:00am–12:00pm, 380 Soda

Oct. 27 **Erin Carson**, UC Berkeley

Recent Work in Communication-Avoiding Krylov Subspace Methods for Solving Linear Systems

The performance of standard Krylov Subspace Methods (KSMS) for solving linear systems is bound by communication, with one or more SpMV operations required per iteration. In this talk, we motivate the need to avoid communication, and demonstrate how this can be achieved in KSMS using communication-avoiding kernels. We discuss the derivation, implementation, and convergence properties of our communication-avoiding versions of CG, GMRES, and BiCG. Preliminary results for preconditioning and the implementation of CGS and BiCG-Stab are presented.