

Title: Spectral multilevel algebraic domain decomposition preconditioners

Abstract: Solving sparse linear systems is omnipresent in scientific computing. Direct approaches based on matrix factorization are very robust, and since they can be used as a black-box, it is easy for other software to use them. However, the memory requirement of direct approaches scales poorly with the problem size, and the algorithms underpinning sparse direct solvers software are poorly suited to parallel computation.