

Fast Direct Solvers for FMM Matrices

Shivkumar Chandrasekaran

shiv@ece.ucsb.edu

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, UNIVERSITY OF
CALIFORNIA, SANTA BARBARA, USA

The Fast Multi-pole Method (FMM) of Greengard and Rokhlin is an algorithm for the rapid multiplication of matrices that have many off-diagonal blocks of low-numerical rank. Such matrices have been shown to play a very important role in the numerical solution of general elliptic PDEs. In this talk we discuss recent efforts to exploit the same FMM structure to develop rapid methods for the *direct* solution of linear systems involving such matrices.