



THE UNIVERSITY OF CHICAGO

Department of Statistics

SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

LEXING YING

Department of Mathematics
Stanford University

Sparsifying Preconditioners for High Frequency Wave Equations

THURSDAY, April 30, 2015 at 4:30 PM
133 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

High frequency wave propagation has been a longstanding challenge in scientific computing. For the time-harmonic problems, integral formulations and/or efficient numerical discretization often lead to dense linear systems. Such linear systems are extremely difficult to solve for standard iterative methods and preconditioners since they are highly indefinite. In this talk, we consider several such cases with important applications. For each one, we construct a sparsifying preconditioner that reduces the dense linear system to a sparse one and solves the problem within a small number of iterations when combined with a standard iterative solver.

Organizers:

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