

Department of Mathematics

University of Houston

Scientific Computing Seminar

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New York University

An Approximate Deflation Preconditioning Method Based on Multiple Grids for Wave Scattering Problems

Tuesday, April 17, 2012

3:00 PM- 4:00 PM

Room 646 PGH

Abstract: In this talk I consider the Lippmann-Schwinger (LS) integral equation for inhomogeneous acoustic scattering. I demonstrate that spectral properties of the LS equations suggest that deflation based preconditioning might be effective in accelerating the convergence of a restarted GMRES method. I will present an analytical framework for convergence theory of general approximate deflation that is widely applicable. Furthermore, numerical illustrations of the spectral properties also reveal that a significant portion of the spectrum is approximated well on coarse grids. To exploit this, I develop a novel restarted GMRES method with adaptive preconditioning based on spectral approximations on multiple grids.

This seminar is easily accessible to persons with disabilities. For more information or for assistance, please contact the Mathematics Department at 743-3500.