数学与系统科学研究院

计算数学所学术报告

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报告题目：

Locating Multiple Small Scatterers by A Single Incident Wave and Preconditioned Douglas-Rachford Splitting Method for Imaging

报告时间：2014 年 2 月 10 日（周一）

下午 **15:50~16:50**

报告地点： 科技综合楼三层 **311**

计算数学所报告厅

Abstract：

This talk contains two parts. We will first introduce the newly developed single-shot method in inverse scattering. It could locate multiple electromagnetic (EM) scatterers of small size compared to the wavelength of the detecting plane wave by the electric far-field measurement corresponding to a single incident/detecting plane wave. The multiple scatterers could be extremely general with an unknown number of components, and each scatterer component could be either an impenetrable perfectly conducting obstacle or a penetrable inhomogeneous medium with an unknown content.

In the second part, we will introduce a preconditioned version of the Douglas-Rachford splitting method for solving general saddle-point problems in imaging. It allows to use approximate solvers for the linear subproblem arising in this class of problems. Various efficient preconditioners are introduced in this   framework for which only one or a few inner iterations are needed instead of computing an exact solution or controlling the error. Numerical experiments show that the proposed algorithms with appropriate preconditioners are very competitive to existing fast algorithms including the alternating direction method of multipliers (ADMM), FISTA and the first-order primal-dual algorithm of Chambolle and Pock.

欢迎大家参加！