

Fall  
2015

*Mathematical Sciences*  
*Colloquium*

**The asymptotic convergence rate of the  
Douglas Rachford iteration for basis pursuit**

ABSTRACT: For large scale nonsmooth convex optimization problems, first order methods involving only the subgradients are usually used thanks to their scalability to the problem size. Douglas-Rachford (DR) splitting is one of the most popular first order methods in practice. It is well-known that DR applied on dual problem is equivalent to the widely used alternating direction method of multipliers (ADMM) in nonlinear mechanics and the split Bregman method in image processing community. When DR is applied to convex optimization problems such as compressive sensing, one interesting question of practical use is how the parameters in DR affect the performance. We will show an explicit formula of the sharp asymptotic convergence rate of DR for the simple L1 minimization. The analysis will be verified on examples of processing seismic data in Curvetlet domain. This is a joint work with Prof. Laurent Demanet at MIT

**Speaker: Xiangxiong Zhang**

**(Purdue University)**

**Monday, October 26, 2015**

**Time: 4:00 – 5:00 PM**

**Location: AE214**



