

数学与系统科学研究院

计算数学所学术报告

报告人: 武婷婷 副教授

(南京邮电大学)

报告题目:

Efficient splitting methods for MRI reconstruction

邀请人: 刘歆 副研究员

报告时间: 2018年3月1日(周四)

上午 10:00--11:00

报告地点: 数学院科技综合楼

Z311 报告厅

报告摘要:

As a fundamental application of compressive sensing, magnetic resonance imaging (MRI) can be efficiently achievable by exploiting fewer k-space measurements. Firstly, we consider solving the TV₂L₁ based

magnetic resonance imaging (MRI) signal reconstruction problem by an efficient alternating direction method of multipliers. By sufficiently utilizing the problem's special structure, we manage to make all subproblems either possess closed-form solutions or can be solved via Fast Fourier Transforms (FFTs), which makes the cost per iteration is very low; Secondly, we consider a constrained total generalized variation and shearlet transform based model for MRI reconstruction, which is usually more undemanding and practical to identify appropriate tradeoffs than its unconstrained counterpart. The second model can be facilely and efficiently solved by the strictly contractive Peaceman-Rachford splitting method, which generally outperforms some state-of-the-art algorithms when solving separable convex programming. Numerical simulations demonstrate that the sharp edges and grainy details in magnetic resonance images can be well reconstructed from the under-sampling data.

欢迎大家参加！