报告人： 秦菁 博士

单位： 蒙大拿州立大学

时间：6月23日（周 五） 13:30--14:30

邀请人： 黎芳

地点：闵行数学楼401报告厅

题目: Graph Fractional-Order Total Variation EEG Source Reconstruction

摘要: EEG source imaging is able to reconstruct sources on the brain from scalp measurements with high temporal resolution. Due to the limited number of sensors, it is very challenging to locate the source accurately with high spatial resolution. Recently, several total variation (TV) based methods have been proposed to explore sparsity of the source spatial gradients, which is based on the assumption that the source is constant at each sub-region. However, since the sources have more complex structures in practice, these methods have difficulty in recovering the current density variation and locating source peaks. To overcome this limitation, we propose a graph Fractional-Order Total Variation (gFOTV) based method, which provides the freedom to choose the smoothness order by imposing sparsity of the spatial fractional derivatives so that it locates source peaks accurately. More recently, we proposed an accelerated version by using the Chambolle-Pock and ARock algorithms, along with diagonal preconditioning. A variety of experiments show that the proposed algorithms have faster convergence than the state-of-the-art methods and have the great potential to achieve the real-time temporal resolution.

个人简介：Jing Qin earned her Ph.D. in applied mathematics from Case Western Reserve University in 2013, and then worked as an assistant adjunct professor at University of California, Los Angeles for three years. Since summer 2016, she joined the Department of Mathematical Sciences at MSU as an assistant professor. Her research interests include variational image processing/analysis and its applications, compressive sensing based image reconstruction, and numerical optimization and applied partial differential equations.

