THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PhD Student Seminar

A Preconditioned Fast Iterative Hard Thresholding Algorithm for Low-Rank Hankel Matrix Completion

By

Miss Xueyang QUAN

Abstract

Spectrally sparse signals arise from many applications, such as seismic imaging, nuclear magnetic resonance spectroscopy, and autoregression. For a spectrally sparse signal of order r, reconstructing it from a random subset of n regular time domain samples can be reformulated as a problem of low-rank Hankel matrix completion. The fast iterative hard thresholding (FIHT) algorithm is efficient in solving this, but it just uses a canonical metric inherited from the ambient matrix space. To speed up the convergence of FIHT, we propose a new algorithm, preconditioned fast iterative hard thresholding (PFIHT). It utilizes a data-driven metric using precondition techniques. We'll demonstrate several experimental results regarding PFIHT and FIHT under various oversampling ratios.

Date : 2 May 2023 (Tuesday)
Time : 10:00am
Venue : CYTG001 (CYT Building)

All are Welcome!