



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

**Convex Recovery in Phase Retrieval and
Low-Rank Matrix: Robustness, Structure,
and Weak Assumptions**

By

Dr. Gao HUANG

National University of Singapore

Abstract

Convex programming provides a powerful framework for recovering signals and matrices from incomplete, corrupted, or structured models. In this talk, I will present recent results on phase retrieval and low-rank matrix recovery, with a particular emphasis on non-idealized models.

I will first discuss phase retrieval with adversarial sparse outliers and coded diffraction patterns, where dual certificate method yield a sharp robustness threshold and an optimal sampling rate, respectively. I will then turn to low-rank Toeplitz matrix restoration and low-rank matrix recovery from heavy-tailed quadratic measurements, where the small ball method and geometric analysis establish recovery guarantees with near-optimal sample complexity under structural constraints and finite $(4+\delta)$ -th moment assumptions, respectively.

Date : 30 October 2026 (Friday)

Time : 10:00a.m.-11:00a.m.

Venue : Room 2612B (near Lift 31/32)

All are Welcome!