



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

**Reconstruction methods for inverse
scattering problems with phaseless data**

By

Dr. Shenwen YU

Tsinghua University

Abstract

In this talk, I will discuss the phaseless inverse scattering problem for the Schrodinger equation and develop reconstruction methods based on the inverse Born series (IBS). We consider three types of phaseless data: the far-field total field, the total field and the far-field scattered field. For phaseless total-field data, we extend the IBS framework and analyze its radius of convergence.

In the far-field setting, we propose a Fourier-based reconstruction method that exploits the scattering reciprocity between incident and observation directions to recover Fourier coefficients of the scattering potential. For phaseless scattered-field data, we employ a polarization-based approach to recover phase information and enable IBS reconstruction. I will also present numerical results to validate the proposed methods.

Date : 26 August 2026 (Wednesday)

Time : 4:00p.m. – 5:00p.m.

Venue : Room 3494 (near Lift 25/26)

All are Welcome!