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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Simultaneous identification of piecewise constant sound speed and initial data for the photoacoustic tomography problem

By

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Abstract

Photoacoustic tomography is a biomedical imaging modality whose goal is to reconstruct a map of absorption in biological tissue in order to identify different structures, and in particular to determine whether they are healthy or not. This modality has multiple applications, including tumor detection, breast cancer diagnosis, imaging of blood vessel networks, and measuring blood oxygenation. In this talk, we will focus on acoustic inversion—one of the steps of photoacoustic tomography—in the case where the speed of sound is an unknown piecewise constant function. Mathematically, our problem consists of simultaneously determining a coefficient and an initial datum of a Cauchy problem associated with the wave equation, from measurements of the solution on a surface. This talk is based on joint works with Gunther Uhlmann and Hongyu Liu.

Date : 8 May 2026 (Friday)
Time : 3:00p.m.-4:00p.m.
Venue : Room 2131C (Lift 19)

All are Welcome!