For favour of Posting

THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Resonant Materials in Inverse Problems

By

Prof. Mourad SINI
Austrian Academy of Sciences

Abstract

In the recent years, we witness an increase of interest in drugs delivery, imaging and therapy modalities using contrast agents. Such agents are small-scaled particles but enjoy extreme contrasts as compared to the usual media. These properties allow them to resonate at special frequencies. In this talk, we describe an approach that allows us to use this resonant behaviour for imaging. In particular, we will show how contrasting the remotely measured waves, generated before and after injecting the small particles, provides us with the travel time function (for time-domain imaging) or the dispersion function (for time-harmonic imaging). Then, we extract the values of the needed coefficients, as the speed of propagation, from the reconstructed travel time (or dispersion) function. As a test example, we will discuss the ultrasound imaging modality using bubbles as contrast agents. Finally, we will show how this approach can go beyond these imaging modalities.

Date : 26 February 2024 (Monday)
Time : 4:00pm - 5:00pm
Venue : Room 4472 (Lifts 25/26)

All are Welcome!