

APPLIED MATHEMATICS SEMINAR
Department of Mathematics
University of West Georgia
4:00 PM, WEDNESDAY, OCTOBER 1, 2008, BOYD 304

Speaker: Dr. Vu Kim Tuan, UWG

Title: **The The Factorization Method for Inverse Scattering Problems**

Abstract

This expository talk is based on the book "The Factorization Method for Inverse Problems" by A. Kirsch and N. Grinberg, Oxford University Press, 2008.

Consider the Helmholtz equation

$$\Delta u + k^2 u = 0 \quad \text{outside } D,$$

and the Dirichlet boundary condition

$$u = 0 \quad \text{on } \partial D.$$

Solutions of the Helmholtz equation satisfying Sommerfeld's radiation condition have some asymptotics

$$u(x) = \frac{e^{ik|x|}}{4\pi|x|} u^\infty(x) + o(|x|^{-2}), \quad |x| \rightarrow \infty.$$

The inverse scattering problem is: Given the wavenumber $k > 0$ and the far field patterns $u^\infty(x)$ determine the shape of the scattering obstacle D .

The book presents the so-called factorization method to solve this inverse problem.

All are welcome.