

WICHITA STATE UNIVERSITY
Department of Mathematics and Statistics

*The Lecture Series in the
Mathematical Sciences Presents Our Guest:*

Prof. David Colton
University of Delaware, Newark, DE

*"The Linear Sampling Method in Inverse
Scattering Theory"*

Abstract:

Radar is one of the most important inventions of the twentieth century. However, until recently, radar has been used mainly for the purpose of detection rather than identification. The first effort to address the problem of target identification was the invention and use of synthetic aperture radar(SAR).However, although achieving remarkable success in certain applications, SAR is inherently limited since it is based on the so called weak scattering approximation which ignores both multiple scattering and polarization effects. In an effort to overcome the limitations of such an incorrect model, considerable effort has recently been put into the development of nonlinear optimization techniques. Unfortunately, the success of optimization techniques is based on strong a priori knowledge of the scattering object and hence is inappropriate for many practical applications. In view of the problems inherent in the weak scattering and nonlinear optimization approaches to target identification, a new method has been developed in the past few years called the linear sampling method. This lecture will discuss the mathematical basis of the linear sampling method as well as some of the open problems that arise in the mathematical analysis of this method. We will also provide a number of numerical examples showing the practicality of this new approach to target identification.

**Friday, December 10, 2004
3:00 PM in 372 Jabara Hall**

*Please come join us for refreshments before the lecture
at 2:30 p.m. in room 353 Jabara Hall.*