

Meeting: 1002, Pittsburgh, Pennsylvania, SS 15A, Special Session on PDE-Based Methods in Imaging and Vision

1002-41-40 **Mohsen Razzaghi*** (razzaghi@math.msstate.edu), Department of Mathematics and Statistics, Mississippi State University, Mississippi State, MS 39762. *A Numerical Scheme for Target Recognition.*

In the application of radar, reflected electromagnetic energy is used to generate velocity profiles which are important for target or pattern recognition, nondestructive testing and remote sensing. Several papers have dealt with one-dimensional scattering problems for the time-dependent wave equation. A numerical scheme for solving the inverse problem that represents the gradient-type interface is presented in this talk. Such an interface is a point at which the velocity profile suffers a jump in first derivative. Usually, in target recognition a priori knowledge of the type of the interface is not available. We are applying inverse scattering to reconstruct different profiles as part of a recognition process, therefore it is important to generate accurate profiles in shallow or deep regions. Numerical examples are included to demonstrate the validity and applicability of the technique. (Received July 19, 2004)