1023-49-1885 **Akhtar A Khan*** (akhtar.khan@uwc.edu), Department of Mathematics, University of Wisconsin-Barron County, 1800 College Drive, Rice Lake, WI 54868. *Parameter Identification in Elliptic Inverse Problems and in Variational and Quasi-variational Inequalities.*

The classical problems of physics involve modeling the outcome of an experiment, assuming the experimental conditions are known. A mathematical model for such a problem often takes the form of a partial differential equation (or of a variational inequality) and the coefficients in the PDE are assumed to be known. These coefficients, which often represent material properties, are among the causes. The direct problem is to solve the PDE, and the solution represents the effects. By contrast, an inverse problems asks for the causes that produce certain effects. In practice, this often means estimating one or more coefficients in a PDE from a measurement of the solution. The solution is therefore the data for the inverse problem.

In this talk, we will focus on inverse problems for elliptic partial differential equations and for variational and quasi-variational inequalities. Due to the ill-posedness of the problem at hand, we will rely on a regularization scheme. Keeping in mind the recent developments for total-variation regularization, we will employ a non-smooth regularization operator.

The effectiveness of the approach will be tested by studying the inverse problem of identifying the Lame parameters in linear elasticity. (Received September 27, 2006)