

## **Professor Akhtar A. Khan**

### *Lecture I: Introduction to Inverse Problem with an Emphasis on Biomedical Applications. Part I.*

This talk, which is the first part of two talks, gives an introduction to the inverse problem of identifying variable parameters in partial differential equations. First some of the most commonly used optimization formulation will be discussed in the setting of a simple PDE and then their extensions to more general PDEs will be given. Numerical examples including computational details will be given.

### *Lecture II: Introduction to Inverse Problem with an Emphasis on Biomedical Applications. Part II.*

This talk will discuss the elasticity imaging or elastography inverse problem of identifying cancerous tumors in the human body. Many methods discussed in the first talk will be extended to the elastography inverse problem. Detailed numerical examples will be given.

### *Lecture III: Some Aspects of Quasi Variational Inequalities*

This talk will focus on quasi-variational inequalities with multi-valued maps. Some of the results are connected to the inverse problem of identifying parameters in quasi-variational inequalities. If time permits, a new conical regularization approach will also be discussed.

### *Lecture IV: Some Iterative Methods for Inverse Problems*

This talk will discuss on some iterative methods for solving elastography inverse problem. The objective is to give a comparison of various iterative methods and to show their feasibility in solving inverse problems.

