MATH 994

Topics in Analysis

Dr. Alex Ramm

The material will be taken from the book: *A.G. Ramm, Inverse Problems, Springer, New York, 2005* and from research papers available from my web site.

1. Inverse problems are the theoretical basis for remote sensing and non-destructive evaluation. Examples from geophysics, medicine, and technology will be discussed. The basic idea is simple: one wants to get information about the properties of a body from the observation of waves scattered by the body.
2. Scattering by many small bodies is of interest in physics and engineering. Many body-scattering problems will be discussed. Applications to creating materials with desired properties (for example, with a desired refraction coefficient, or desire wave-focusing properties) will be developed. Possible implementation of this theory will be explained.

Research problems in various areas of analysis will be formulated.

The background material includes some knowledge of analysis.

For more details about the course, see Professor Ramm.