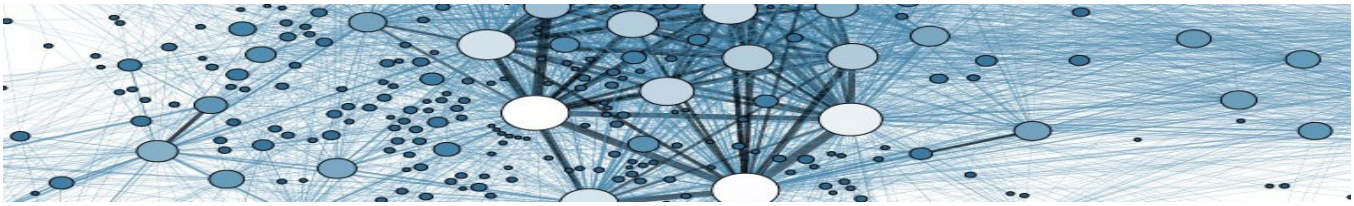

Department of Statistics Seminar

Tuesday, May 9, 2017

3:45 – 4:45 p.m., Room 420, Olmsted Hall

Reception in Olmsted 1331 at 3:15 p.m.

A Survey of the Critical Contributions of Mathematical Statistics in Nuclear Explosion Monitoring Research

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Abstract:

An underground explosion will generate a transient seismic wave from coupled energy into crustal rock. Technical measurements made on this time series signature are the basis for answering the three core questions in underground nuclear explosion monitoring: What was the source (e.g., single-point underground explosion, earthquake, mining explosion, etc.)?; How large was the source?; What is the confidence level of assessments?.

Research and application of physics-based error models have always been integral to explosion monitoring research. New error models based on established statistical methods are always being considered and developed. These models are essential because measurements from waveforms must be correctly weighted in all analyses, and the error in physical corrections to seismic measurements must be correctly propagated along with measurement error. This presentation will review the core analyses that comprise explosion monitoring, and the aspects of mathematical statistics research that are integral to these analyses.

Biography:

Dr. Dale N. Anderson is the Leader of Ground-Based Nuclear Detonation Detection Program at Los Alamos National Laboratory, USA, in support of nuclear weapon test treaties. Dr. Anderson received his Ph.D. degree in applied statistics from the University of California in Riverside, CA, USA. He has over 20 years of experience in statistical application and research to enable nuclear weapon test monitoring.