



The University of Chicago

Department of Statistics

Seminar Series

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**WEI BIAO WU**

Department of Statistics  
The University of Chicago

**“What is dependence?”**

**MONDAY, March 27, 2006 at 4:00 PM**  
**133 Eckhart Hall, 5734 S. University Avenue**  
*Refreshments following the seminar in Eckhart 110.*

### **ABSTRACT**

In the study of random processes, dependence is the rule rather than the exception. To facilitate the related statistical analysis, it is necessary to quantify the dependence between observations. In the talk I will briefly review the history of this fundamental problem in 1950s. By interpreting random processes as physical systems, I will introduce physical and predictive dependence coefficients that quantify the degree of dependence of outputs on inputs. Relations with nonlinear system theory and riskmetrics will be discussed. Such dependence measures provide a new framework for the study of random processes and shed new light on a variety of problems including robust estimation of linear models with dependent errors, nonparametric inference of time series, representations of sample quantiles, bootstrap for time series, spectral estimation among others.

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Please send email to Mathias Drton ([drton@galton.uchicago.edu](mailto:drton@galton.uchicago.edu)) for further information. Information about building access for persons with disabilities may be obtained in advance by calling the department office at (773) 702-8333.