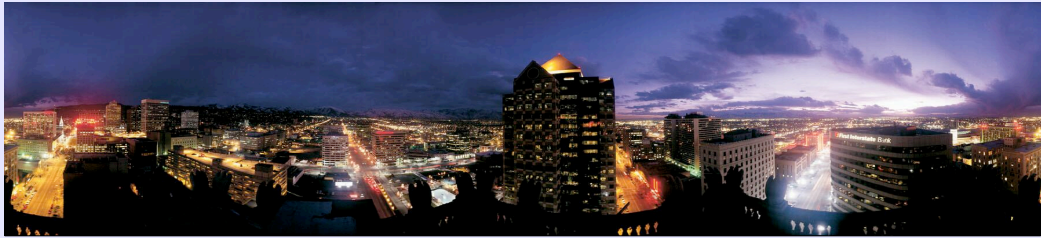


# *Stochastics Seminar*

## Department of Mathematics, University of Utah



## Independent Constants and Some Gaussian Inequalities

*Wenbo V. Li*

University of Delaware

**Time and Place:** Wednesday April 19, 2006; 3:30–4:25 p.m.; JWB 308

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Given  $d$  real-valued random variables  $X_1, \dots, X_d$ , there are various ways to measure dependence-structures among them. They include measuring correlations, mixed moments, etc. In this talk, we define and study a new measure that captures the amount of dependence when it is compared with the “best” independent ones. To be more precise, we consider the best (largest constant  $\alpha$  and smallest constant  $\beta$ ) possible probability bounds

$$\alpha \prod_{i=1}^d P(W_i \in B_i) \leq P\left(\bigcap_{i=1}^d \{X_i \in B_i\}\right) \leq \beta \prod_{i=1}^d P(Y_i \in B_i),$$

for some real valued random variables  $W_i, Y_i$ , and all Borel sets  $B_i, 1 \leq i \leq d$ . The joint Gaussian case will be discussed in detail.