



KATHOLIEKE UNIVERSITEIT LEUVEN

## **Statistics Seminar**

Joint organization statistics research groups Faculty of Science and Faculty of Business and Economics

Leuven Statistics Research Centre (LSTAT)

### **Prof. Dr. Abdelaati Daouia**

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### **“On projection-type estimators of multivariate isotonic functions”**

**Thursday December 15, 2011**

**12:00—13:00**

**Location:** Room B02.18, Department of Mathematics, Celestijnenlaan 200B, Heverlee.  
**Supporting research project:** GOA-project 2007/04

**Abstract:**

(see the next page)

## On Projection-Type Estimators of Multivariate Isotonic Functions

Let  $M$  be an isotonic real-valued function on a compact subset of  $\mathbb{R}^d$  and let  $\hat{M}_n$  be an unconstrained estimator of  $M$ . A feasible monotone function that lies below (above) the estimator  $\hat{M}_n$  or any convex combination of these two envelope estimators. When the process  $r_n(\hat{M}_n - M)$  is asymptotically equicontinuous for some sequence  $r_n > 0$ , we show that these projected estimators are  $r_n$ -equivalent in probability to the original unrestricted estimator. Our first motivating application involves a monotone estimator of the conditional distribution function that has the distributional properties of the local linear regression estimator. Applications also include the estimation of econometric (probability-weighted moment, quantile-based) and biometric (mean remaining lifetime) functions.

*This is joint work with Byeong U. Park*