

Empirical Processes and Statistics, Winter, 2006

Organizer: Jon A. Wellner

Tentative Times: TTh 8:00 - 9:30 AM or TW 3:30 - 5:00 PM

First Meeting: Tuesday, January 10, 2001

I intend to organize a seminar series (or working group) on empirical process theory and its applications in statistics during winter quarter 2006. The tentative plan is to review modern empirical process theory, and then move to applications of this theory to a variety of statistical problems. One possibility would be to work through some of the examples and supporting material in Aad van der Vaart's St. Flour lecture notes on "Semiparametric Statistics".

If you are interested in this working group/seminar series, please send me e-mail and let me know: (a) which of the two possible times work best for you? (b) if you would be willing to talk/lead one or more discussions/lectures?

I will limit future mailings to those who respond to this initial query.

Many thanks.

Jon W.

Tentative Topics / Outline

- **Empirical Process Basics:**

Exponential bounds and Chaining;

Empirical Processes and Gaussian Limits;

Vapnik - Chervonenkis classes of sets and functions;

Uniform covering numbers; bracketing covering numbers;

Glivenko-Cantelli classes; Donsker classes;

- **Applications of Empirical Processes to Statistics:**

Likelihood estimation in semiparametric models;

nonparametric maximum likelihood; regression;

bootstrap theory and methods.

- **Adaptive Nonparametric Estimation: isoperimetric inequalities and model selection**

isoperimetric inequalities;

model selection.

Books:

- Van der Vaart, A. W. (2002). *Semiparametric Statistics*. In *Lectures on Probability Theory and Statistics*, Ecole d'Été de Probabilités de Saint-Flour XXIV - 1999. *Lecture Notes in Mathematics* **1781**, 332 - 457.
- Van der Vaart, A. W. and Wellner, Jon A. (1996). *Weak Convergence and Empirical Processes*, Springer, New York.
- Van de Geer, S. A. (1999). *Applications of Empirical Process Theory*, Cambridge University Press, Cambridge.
- Dudley, R. M. (1999). *Uniform Central Limit theorems*. Cambridge University Press, Cambridge.
- Talagrand, M. (2005). *The Generic Chaining*. Springer, New York.