

## CURRICULUM

**Giovanna Nappo**

- born in Viterbo (Italy) April 8, 1957
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### POSITION:

**Associate Professor** in Probability and Mathematical Statistics at Department of Mathematics - University of Rome "La Sapienza" [since 1-11-1992]

### PREVIOUS POSITION:

**Ricercatore** in Probability at Department of Mathematics - University of Rome "La Sapienza" [16-04-1984 — 31-10-1992]

### RESEARCH FIELDS

The main research interest concerns Approximation Problems in different fields: Nonlinear Filtering, Stochastic control, non parametric Bayesian Statistics, Point processes, Interacting particle systems, Markov Processes. Other interests concern Point processes, Stochastic delay differential equations, Risk modelling. Lately the research has focused on financial applications.

## VISITED SCIENTIFIC INSTITUTIONS (at least one month)

- **INRIA, École Normale Supérieure , Paris, France**  
(September 2003) Prof. F. Baccelli and Prof. P. Brémaud
- **University of Wisconsin, Madison, USA** Prof. T. G. Kurtz  
(July 1999)
- **University of Heidelberg, Germany** Prof. H. Rost (October  
1987 - May 1988)
- **Science Academy, Moscow, URSS** Prof. Ya. G. Sinai  
(September 1987)
- **BiBoS, Bielefeld, Germany** (Bielefeld Bochum Stochastics) Prof.  
S. Albeverio (January 1985)
- **Ruhr University, Bochum, Germany** Prof. S. Albeverio  
(February - April 1984)

## ORGANIZATION OF CONFERENCES

- *International Symposium "Bruno de Finetti Centenary Conference"*  
November 15-17, 2006 - Roma, Università "La Sapienza" e  
Accademia dei Lincei.
- Workshop *Stochastic Methods in Mathematical Finance*, dedicated  
to the memory of Bruno Bassan September 15/17, 2005 - Roma,  
Università "La Sapienza".
- Workshop *Stochastic Processes, Stochastic Calculus and Applications*  
September 19/20 2002 - Roma, Università "La Sapienza".
- Workshop *Nonlinear Filtering: Uniqueness and Approximation  
Techniques for Solutions of Filtering Equations* January 14/15  
1999 - L'Aquila, Università dell'Aquila.

## PhD STUDENTS

PhD in Mathematics:

**G. L. Torrisi** *Rate of convergence to stationarity of nonlinear Hawkes processes* (2001)

with Prof. P. Brémaud (Paris CNRS, France)

PhD in Mathematical Statistics:

**B. Torti** *Diffusive approximations for queueing network models: results and conjectures about the filter convergence* (2002)

with Prof. A. Gerardi (Università dell'Aquila, Italia)

PhD in Applied Mathematics:

**G. Bravaccino** *Simulation of linear stationary Hawkes processes* (2004)

PhD in Mathematics

**F. M. Marchetti** *Implied volatility skew in a simple model with heterogeneous beliefs* (2009)

## TEACHING (last years)

### Master in Scientific Calculus

**Mathematical Finance** (A.A. 2004/05, 2005/06, 2008/09)

### PhD in Mathematics

**Probabilistic Methods in Partial Differential Equations**

(A.A. 2007/08, 2008/09)

**Functional Methods in Asymptotical Statistics**

(A.A. 2003/04)(with M. Piccioni and Y. Rinott)

**Probability and martingales** (A.A. 2001/02)

### Bachelor degree in Mathematics

**Probabilistic Methods in Finance**

(A.A. 2001/02 – 2008/09)

**Probability** (A.A. 2001/02 – 2004/05, 2009/10)

**Advanced Probability** (A.A. 2009/10)

**Stochastic processes** (A.A. 2004/05, and 2006/07)

## Papers published in International Journals

- [1] M. FISCHER, G. NAPPO, *On the moments of the modulus of continuity of Itô processes*. (2009) (Stochastic Analysis and Applications, accepted)
- [2] G. NAPPO, F. SPIZZICHINO, *Relations between Kendall Distributions and level sets in bivariate exchangeable survival models*. Information Sciences, special issue on *Copulas, measures and integrals* vol. 179, n. 17, pp. 2878-2890, 2009
- [3] A. CALZOLARI, P. FLORCHINGER, G. NAPPO, *Nonlinear filtering for Markov systems with delayed observations*. International Journal of Applied Mathematics and Computer Science vol. 19, n. 1, pp. 49-57, 2009
- [4] M. FISCHER, G. NAPPO, *Time discretization and rate of convergence for the optimal control of continuous-time stochastic systems with delay*. Appl. Math. Optim., vol. 57, n. 2, pp. 177-206, 2008
- [5] A. CALZOLARI, P. FLORCHINGER, G. NAPPO, *Convergence in nonlinear filtering for stochastic delay systems*. SIAM J. Control Optim., vol. 46, n. 5, pp. 1615-1636, 2007.
- [6] ASCI, C., NAPPO, G., AND PICCIONI, M. The hyper-Dirichlet process and its discrete approximations: the butterfly model. *J. Multivariate Anal.* 97, 4 (2006), 895–924.
- [7] CALZOLARI, A., FLORCHINGER, P., AND NAPPO, G. Approximation of nonlinear filters for Markov systems with delayed observations. *SIAM J. Control Optim.* 45, 2 (2006), 599–633 (electronic).
- [8] NAPPO, G., AND TORTI, B. Continuous time random walks and queues: explicit forms and approximations of the conditional law with respect to local times. *Stochastic Process. Appl.* 116, 4 (2006), 585–610.
- [9] NAPPO, G., AND TORTI, B. Filtering of a reflected Brownian motion with respect to its local time. *Stochastic Process. Appl.* 116, 4 (2006), 568–584.
- [10] BRÉMAUD, P., NAPPO, G., AND TORRISI, G. L. Rate of convergence to equilibrium of marked Hawkes processes. *J. Appl. Probab.* 39, 1 (2002), 123–136.
- [11] CALZOLARI, A., AND NAPPO, G. Counting observations: a note on state estimation sensitivity with an  $L^1$ -bound. *Appl. Math. Optim.* 44, 2 (2001), 177–201.
- [12] CALZOLARI, A., AND NAPPO, G. Robust approximation in a filtering problem with real state space and counting observations. *Appl. Math. Optim.* 42, 1 (2000), 51–71.

- [13] NAPPO, G., AND SPIZZICHINO, F. Ordering properties of the TTT-plot of lifetimes with Schur joint densities. *Statist. Probab. Lett.* 39, 3 (1998), 195–203.
- [14] CALZOLARI, A., AND NAPPO, G. A filtering problem with counting observations: error bounds due to the uncertainty on the infinitesimal parameters. *Stochastics Stochastics Rep.* 61, 1-2 (1997), 1–19.
- [15] CALZOLARI, A., AND NAPPO, G. A filtering problem with counting observations: approximation with error bounds. *Stochastics Stochastics Rep.* 57, 1-2 (1996), 71–87.
- [16] NAPPO, G., ORLANDI, E., AND ROST, H. A reaction-diffusion model for moderately interacting particles. *J. Statist. Phys.* 55, 3-4 (1989), 579–600.
- [17] GERARDI, A., AND NAPPO, G. Martingale approach for modeling DNA synthesis. *SIAM J. Appl. Math.* 48, 6 (1988), 1424–1436.
- [18] NAPPO, G., AND ORLANDI, E. Limit laws for a coagulation model of interacting random particles. *Ann. Inst. H. Poincaré Probab. Statist.* 24, 3 (1988), 319–344.
- [19] COSTANTINI, C., GERARDI, A., AND NAPPO, G. On the convergence of sequences of stationary jump Markov processes. *Statist. Probab. Lett.* 1, 3 (1983), 155–160.
- [20] COSTANTINI, C., AND NAPPO, G. Some results on weak convergence of jump Markov processes and their stability properties. *Systems Control Lett.* 2, 3 (1982/83), 175–183.

### **Papers appeared in Conference Proceedings**

- [1] A. CALZOLARI, P. FLORCHINGER, G. NAPPO, *Approximation of nonlinear filters for Markov systems with delayed observations*, Proceedings of the 45th Conference on Decision and Control (San Diego, CA, USA, December 13-15, 2006,). Inst. Electr. Electron. Engrs., New York, pp. 308 – 313 , 2006
- [2] CALZOLARI, A., FLORCHINGER, P., AND NAPPO, G. Nonlinear filtering for Markov diffusion systems with delayed observations. In *Proceedings of the 42nd Conference on Decision and Control (Maui, Hawaii, December 2003)* (2003), Inst. Electr. Electron. Engrs., New York, pp. 1404 – 1405.
- [3] NAPPO, G., AND SPIZZICHINO, F. A Concept of Dynamic Sufficiency and Optimal Stopping of Longitudinal Observations of Lifetimes. In *MMR 2000, Deuxième Conférence Internationale sur les Méthodes Mathématiques en Fiabilité. Méthodologie, Pratique et Inférence*,

*Bordeaux, France, 4-7 Juillet 2000, Livre des Actes*, vol. 2, pp. 796-799, 2000.

- [4] GERARDI, A., AND NAPPO, G. DNA distribution as a measure valued process. In *Stochastic differential systems (Marseille-Luminy, 1984)*, vol. 69 of *Lecture Notes in Control and Inform. Sci.* Springer, Berlin, 1985, pp. 35–42.

### **Technical Reports and Preprints**

- [1] T.G. KURTZ, G. NAPPO, *The filtered martingale problem* (2009)  
(to appear on The Oxford Handbook of Nonlinear Filtering).
- [2] F.M. MARCHETTI, G. NAPPO, G. VAGNANI, *Heterogeneous beliefs, stochastic volatility and asymmetry of implied volatility* (2009)
- [3] F.M. MARCHETTI, G. NAPPO, G. VAGNANI, *Some remarks on the implied volatility smile and on a related identification problem.* (2007).
- [4] G. NAPPO, F. SPIZZICHINO, *Relations between Kendall distributions and families of bivariate Values at Risk in exchangeable survival models.* (2006)
- [5] G. BRAVACCINO, P. BRÉMAUD, G. NAPPO, *Simulation of linear stationary Hawkes processes: the subexponential case*, (2006)
- [6] A. CALZOLARI, G. NAPPO, *The filtering problem in a model with grouped data and counting observation times*, (2001)