

# Vasileios Maroulas

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## Research Interests

- Multitarget Nonlinear Estimation and Filtering.
- Large Deviations and Applications to Image Analysis, Stochastic (Partial) Differential Equations.
- Applications of Sequential Analysis to target detection and estimation.
- Biomedical Statistics focusing on heart related risk prediction models

## Education

- PhD (2008), “*Small noise large deviations for infinite dimensional stochastic dynamical systems.*” Department of Statistics and Operations Research, University of North Carolina at Chapel Hill, NC. Thesis Advisor: Prof. Amarjit Budhiraja.
- MSc (2006), Department of Statistics and Operations Research, University of North Carolina at Chapel Hill, NC. Advisor: Prof. Amarjit Budhiraja.
- BSc (2003), Department of Mathematics, University of Athens, Greece. Major in Applied Mathematics.

## Professional Appointments

- Industrial Postdoctoral Fellow, Institute for Mathematics and its Applications, University of Minnesota. September 2008-.

## Awards and Honors

- *IMA (Institute for Mathematics and its Applications) Postdoctoral Fellowship*, 2008-2010 (NSF funded).
- *Industrial Postdoctoral Fellowship*. Lockheed Martin. 2008-2010.
- *Eleneio Doctoral Thesis Award*. Greek Statistical Society, April 2009.
- *Travel Award* for the 33<sup>rd</sup> Conference on Stochastic Processes and their applications. Berlin, Germany, Summer 2009.
- *Travel Award* for the 32<sup>nd</sup> Conference on Stochastic Processes and their applications. Summer 2007, Department of Mathematics, University of Illinois at Urbana-Champaign, USA.
- *UNC Travel Award*. Graduate School, UNC. Summer 2007.
- *A. Bem Prize* for the best project in mathematical programming. Spring 2002. Department of Mathematics, University of Athens, Greece.
- *National Award* for the best performance as an undergraduate student. Fall 2001. Department of Mathematics, University of Athens, Greece.

## Publications

1. “Small noise large deviations for infinite dimensional stochastic dynamical systems”, PhD Dissertation (2008).
2. “Large deviations for infinite dimensional stochastic dynamical systems”, (with A. Budhiraja and P. Dupuis), *Annals of Probability*, 36, no 4 (2008), 1390-1420.
3. “Large deviations for stochastic flows of diffeomorphisms”, (with A. Budhiraja and P. Dupuis). *To Appear, Bernoulli*.
4. “A sequential procedure for simultaneous detection and state estimation of Markov signals” (with E. Grossi and M. Lops). *The Proc. of IEEE Int. Symp. Info. Th.*, 2009, 654-658.
5. “Variational representations for continuous time processes”, (with A. Budhiraja and P. Dupuis). *Submitted*.

6. "Sensitivity of a health measurement scale as a non-decreasing function of the number of classes", (with D.B.Panagiotakos). *Submitted*.
7. "Missile-staging tracking using a cardinalized probability hypothesis density filter", (with R. Mahler). *Submitted* (permission pending for public release by Lockheed Martin).
8. "A uniform large deviation principle for functionals of a Poisson random measure and infinite dimensional Brownian motion." *Under preparation*.
9. "Statistical Analysis on surgical mortality for repair of Congenital Heart Disease", (with L.Kochilas, K. Rood, V. Larson, and J. Moller). *Under preparation*.
10. "Large scale covariates increase prediction accuracy of health related risk models", (with A. Fitzgerald and D.B. Panagiotakos). *Under preparation*.

### **Invited Talks**

- *Honorarium Eleneio Lecture*, Greek Statistical Meeting, April 2009.
- University of Minnesota, Statistics Department, Colloquium Seminar, Minneapolis, MN, April 2009.
- National Technical University of Athens, Greece, Colloquium Seminar, July 2008.
- University of Athens, Greece, Statistics Seminar, June 2008.
- Columbia University, New York, NY, Probability Seminar, March 2008.
- Wayne State University, Detroit, MI, Colloquium Seminar February 2008.
- State University of New York, Binghamton, NY, Colloquium Seminar, February 2008.
- University of Virginia, Charleston, VA, Colloquium Seminar, February 2008.
- Brown University, Providence, RI, Applied Mathematics Seminar, January 2008.

### **Contributed Talks**

- Institute for Mathematics and its Applications, University of Minnesota, Postdoctoral Seminar, December 2009.
- University of Minnesota, Applied Mathematics Seminar, November 2009.
- 33<sup>rd</sup> Conference on Stochastic Processes and their applications, Berlin, Germany, July 2009. Contributed Session.
- Institute for Mathematics and its Applications, University of Minnesota, Postdoctoral Seminar, April 2009.
- University of Minnesota, Mathematics Department, Probability Seminar, Minneapolis, MN, September 2008.
- Institute for Mathematics and its Applications, University of Minnesota, Postdoctoral Seminar, September 2008.
- 32<sup>nd</sup> Conference on Stochastic Processes and their applications, Urbana, IL, August 2007. Contributed Session.

### **Industrial and Governmental Research Experience**

- Postdoctoral Researcher, *Lockheed Martin*, Eagan, MN. September 2008-.
- Research Assistant, *SAS Institute*, Economics applications of Time Series Analysis (Model Selection and Forecasting). Summer 2006. SAS Institute, Cary, NC.
- Research Assistant (with Dr. George Psacharopoulos) on Applied Economics. Spring 2003. *Parliament of Greece*, Greece.

### **Statistical Consulting Experience**

- Consultant (with Dr. Deborah Fleming) on Statistical Analysis about "Menopause and Associated Oral Manifestations." Spring 2006. Department of Statistics and Operations Research, UNC-CH.

- Consultant (with Dr. Jerrid Freedman, Prof. J.S. Marron) on Statistical Analysis about “Reasons for a Student to abandon Post-Secondary Education”. Spring 2005. Department of Statistics and Operations Research, UNC-CH.
- Consultant (with Dr. Molly Losh, Prof. J.S. Marron) on Statistical Analysis about “Autistic children and effects of autism on their siblings”. Fall 2004. Department of Statistics and Operations Research, UNC-CH.

### Teaching Experience & Undergraduate Mentoring

- *Mentor for Undergraduate Student*: Khoa Dinh, Senior in Statistics and Biomedical engineering. “Medical statistics problems associated with congenital heart diseases.” IMA. University of Minnesota, October 2009-.
- *Instructor (with full responsibility)*: Spring & Summer Semesters 2005, Spring, Summer & Fall Semesters 2007, Spring Semester 2008 (100 students). Introduction to Statistics. Department of Statistics and Operations Research, UNC-CH.
- *Teaching Assistant*: Fall 2003-Fall 2004. Introduction to Statistics, Basic Statistics, Mathematical Statistics, Statistical Methods I (SAS programming responsible). Department of Statistics and Operations Research, UNC-CH.

### Computer Skills

- R, SAS, Splus, Matlab, Fortran 77, Latex, MS Office

### Reviewer

- Journal of Theoretical Probability, Acta Applicanda Mathematicae

### Professional Affiliations

- Member, American Statistical Association
- Member, Institute of Mathematical Statistics
- Invited Member, Greek Statistical Society

### Languages

- English, French, Greek

### References

1. *Professor Amarjit Budhiraja*  
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University of North Carolina  
[budhiraj@email.unc.edu](mailto:budhiraj@email.unc.edu)
2. *Dr. Ronald Mahler*  
Lockheed Martin  
[ronald.p.mahler@lmco.com](mailto:ronald.p.mahler@lmco.com)
3. *Professor Vladas Pipiras*  
Department of Statistics and OR  
University of North Carolina  
[pipiras@email.unc.edu](mailto:pipiras@email.unc.edu)
4. *Professor Lazaros Kochilas*  
Department of Pediatrics  
University of Minnesota  
[kochilas@umn.edu](mailto:kochilas@umn.edu)
5. *Professor Edward Carlstein* (teaching)  
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