
Statistics and Applied Probability

UNIVERSITY OF CALIFORNIA, SANTA BARBARA



2008-09 Annual Report

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The department has finished another successful year. We welcomed a new faculty member to the department, Michael Ludkovski. Dr. Ludkovski's research area is applied probability and stochastic control, especially with applications to financial mathematics and insurance.

Dr. Dawn Holmes has been named Acting Senior Associate Dean in the Division of Undergraduate Education.

Professor Jean-Pierre Fouque, Director of the CRFMS, was elected Fellow of the Institute of Mathematical Statistics as well as Chair of the SIAM (Society for Industrial and Applied Mathematics) Activity Group on Financial Mathematics and Engineering (SIAG/FME), Spring 2009.

Congratulations were also in order to Professor S Rao Jammalamadaka who was named as an adjunct professor at the C.R. Rao Advanced Institute for Mathematics, Statistics, and Computer Science at the Central University of Hyderabad, India.

Claudia Carlson, our Management Services Officer retired after 25 years of service to the university.

The Department organized a very successful public lecture entitled "Overview on Foreign Exchange and Capital Markets" presented on January 26, 2009 by Arnold Miyamoto, Managing Director of CitiGroup.

Computing Facilities

Important department servers are now monitored by an online tool to check their status and health. Two additional nodes have been added to the compute cluster. Documentation has been updated and moved to the web. Compute cluster users can now subscribe to a mailing list to receive status updates of the cluster. Lab computers using the Windows operating system have been updated. Memory has been increased for the mail server to improve performance and the backup server now has more disk space.

Statlab Report

The Statlab assisted many clients during the past year, both from on and off campus. There has been a noticeable increase in consultation requests from off-campus individuals and organizations. The topics involved were diverse but usually have proven robust solutions. These included hierarchical regression model, survival analysis, correlation in microarray gene expression data, multiple comparisons, questionnaire design and sample size determination, power analysis, and logistic regression. On campus consultees came from many departments including EEMB, Graduate School of Education, Economics, Geography, and Communication. Computational tools and packages we used, included Excel, SPSS and SAS. In addition to advice on how to use existing packages, custom computer scripts in R were written occasionally for the client and sometimes even formal reports. There is indeed a good deal of demand for statistical consulting service from researchers on campus, as well as from off-campus clients who are willing to make donations. The graduate student consultants, which this year included Jeongjun Lee, and Gavin Wu benefitted greatly from the consultation sessions, especially in problem-solving and communication skills during the past year.



Faculty

Guillaume Bonnet, PhD University of North Carolina, Chapel Hill 2002
Andrew V. Carter, PhD Yale University 2000
János Engländer, DSc Technion, Haifa, Israel 1997
Raisa E. Feldman, DSc Technion-Israel Institute of Technology 1987
Jean-Pierre Fouque, PhD Université de Paris VI 1979
David Hinkley, PhD London University 1969
Dawn Holmes, PhD University of Bradford 2000
John Hsu, PhD University of Wisconsin, Madison 1990
S.R. Jammalamadaka, PhD Indian Statistical Institute, Calcutta 1969
Michael Ludkovski, PhD Princeton University 2005
Wendy Meiring, PhD University of Washington 1995
Yuedong Wang, PhD University of Wisconsin 1994

Visiting Faculty

Marco Frittelli
Michael Landrigan

Postdocs

Oana Catu
Mack Galloway
Hyekyung Min
Adam Tashman

Emeritus Faculty

Joseph Gani, Professor Emeritus; PhD Australian National University
1955; DSc, University of London 1970
Svetlozar Rachev, PhD Lomonosov University, Moscow 1979; DSc Steklov
Institute, Moscow 1986
James Robertson, PhD Indiana University 1964

Staff

Claudia Carlson, Management Services Officer
Angelica Arce, Undergraduate Program Assistant
Rickie Lazzerini, Graduate Program Assistant
Troy Small, Computer Systems Administrator
Dēnna Zamarron, Financial/Personnel Coordinator
Qua Nguyen, Student Assistant

Graduate Students

Nathan Bennett
Guofeng Cao
Yu-Ting Cheng
Chi-Yang Chiu
Dan Dai
Chunkai Gao
Hamid Ghofrani

Stephen Gosnell
Jonathan Grotts
Shirley Han
Matthew Hancock
Richard Harang
Mina Hosseini
Nicole Ifill
Homin Jang
Yihua Jiang
Susie Kang
Aleksandr Keyfes
Shahryar Khorsandravan
Mee-Kyung Kim
Eli Kollman
Varvara Kulikova
Yu-Jung Kuo
Jeongjun Lee
Douglas Lemon
Hong Li
Shenglong Liu
Ruby Loria
Matthew Lorig
Chunhsiung Lu
Beibei Ma
Alicia Maravilla
Eduardo Montoya
Munpyung O
Jose Ochoa
Bin Ren
Hoon Rhew
Roberto Rivera
Raj Sau
Jacob Serup
Julianne Shan
Qunying Shen
Marick Sinay
Xi Song
Winslow Strong
Li-Hsien Sun
Tomohiro Tsuruga
David Tung
Chunkai Wang
Juan Wang
Matthew Wheeler
Brian Wignall
Junqing Wu
Yan Xu
Li Yang
Yue Yang
Fengling Yu
Kathy Zha

Degrees Awarded 2008-09

Bachelor of Arts/Science

Statistical Science, B.S.

Ai, Han
Gutierrez, Jose, Gilberto
Hathaway, Colin, Thomas
McEachern, Scott, Joseph
Pang, Kedi,
Schroeder, Gregor, King
Wright, Alexander, Michael

Financial Mathematics & Statistics, B.S.

Arias, Victor, E
Burrell, Jeffrey, Alan
Chang, Simon, V
Cone, Tyler, Royce
Dewolfe, James, Stephen
Diep, Ronnie
Elefant, Marianne, Beth
Foley, Ryan, Elwin
Heng, Leann, Josephine
Izakov, Michael
Kashfipour, Hadi, Mohammad
Lopez-Douzoglou, Federicao
McBrayer, Brandon, Scott
Moffett, Joshua, Andrew
O'Brian, Marc, Charles Jr
Ochoa, Miguel, Angel
Roberts, Ian, G
Thiombane, El, Hadji, Masour
Ward, Matthew, Kenneth
Weeks, Gabriel, Dutcher
Zhao, Shunyan

Statistical Science, B.A.

Collins, Maya, Koharu
Powers, Gregory, Scott

Minors

Couverly, Michael
Hammershaib, Venzel
Heinrich, Daniel, John
Mimnaugh, Damien

Rama Thogarati Prize

Awarded to

Colin Thomas Hathaway

The Rama Thogarati Prize is awarded annually to a senior undergraduate student for high academic achievement. The prize is in memory of Rama Thogarati, a graduate student.

Lowes Scholarship

Awarded for Support in 2007-2008

Scott McEachern and Yifan Wang

The Robert and Barbara Lowes Scholarships in Financial Mathematics and Statistics are awarded each year to talented undergraduate students enrolled in the major. The Lowes scholarship is funded by Robert and Barbara Lowes.

Masters of Arts

Summer 2008:

Aleksandr Keyfes
Shahryar Khorsandran
Juan Wang
Yue Yang

Fall 2008:

Hoon Rhew
Dan Dai
Chunkai Gao
Bin Ren

Winter 2009:

Yu-Jung Kuo
Yan Xu

Spring 2009:

Jonathan Grotts
Beibei Ma
Qunying Shen

Brian Wignall – Ph.D. in Statistics & Applied Probability with an Emphasis in Financial Mathematics & Statistics – Spring 2009
“Structural modeling and top-down reduced-form modeling for multi-name credit derivatives”
Advisor: Jean-Pierre Fouque

Grad Facts

◆ Ph.D. student Richard Harang won the UCSB Affiliates Graduate Dissertation Fellowship for dissertation support during Fall quarter

PhD Degrees Awarded

Homin Jang – Ph.D. in Statistics & Applied Probability – Spring 2009
“Shrinkage estimators of variances and their applications to microarray data analysis”
Advisor: Yuedong Wang

Eli Kollman - Ph.D. in Statistics & Applied Probability with an Emphasis in Financial Mathematics & Statistics – Spring 2009
“Calibrating market and asset returns from stochastic volatility skew effects”
Advisor: Jean-Pierre Fouque

Marick Sinay – Ph.D. in Statistics & Applied Probability – Spring 2009
“Bayesian Inference for Linear and Generalized Linear Models with Flexible Prior Structure on the Covariance Matrix”
Advisor: John Hsu

David Tung – Ph.D. in Statistics & Applied Probability – Spring 2009
“Some contributions to inference based on spacings”
Advisor: S. Rao Jammalamadaka

Wald Prize

Bin Ren & Qunying Shen

Awarded for excellence in graduate studies as selected by the faculty for the best grade on the Qualifying Exams. Awarded in memory of Dr. Abraham Wald, eminent American Statistician.

Ruth and Joe Gani Prize

Douglas Vestal

Awarded to a graduate student for excellence in research as selected by the faculty.

Seminars

October 8, 2008, Yuedong Wang, UCSB,
Nonparametric Nonlinear Regression Models

October 15, 2008, Sreenivas Jammalamadaka,
UCSB, Directional Statistics -what is it?

October 29, 2008, Greg Ridgeway
Senior Statistician, RAND Corporation, Santa Monica,
CA, Racial Profiling Analysis

November 5, 2008, Michael Ludkovski, UCSB,
Optimal Risk Sharing under Distorted Probabilities

November 12, 2008, Qing Zhou, UCLA,
Reconstructing the Energy Landscape of a
Distribution from Monte Carlo Samples

November 19, 2008, Ping Ma, University of Illinois at
Urbana-Champaign, A Journey to the Center of the
Earth

November 20, 2008, James Hardin, Department of
Epidemiology and Biostatistics, University of South
Carolina, An Overview of the Sandwich Variance
Estimator

January 7, 2009, Dr. Daniel Merl, Duke University,
Nonparametric mixtures of nonparametric mixtures
for detecting cell subtypes in flow cytometry

January 9, 2009, Dr. Donatello Telesca, University of
Texas, M.D. Anderson Cancer Center), Modeling
Dependent Expression Data

January 12, 2009, Mr. Jarad Niemi, Duke University,
Computational approaches for general state-space
models

January 14, 2009, Dr. Elizabeth C. Mannhardt-
Shamseldin, Duke University, Asymptotic
Multivariate Kriging Using Estimated Parameters
with Bayesian Prediction Methods for Non-linear
Predictands

January 14, 2009, Prof. David Aldous (UC Berkeley),
When Knowing Early Matters: Gossip, Percolation
and Nash Equilibria

January 15, 2009, Dr. Michael Lavine , University of
Massachusetts Amherst, Subjective Likelihood

January 21, 2009, Dr. Amanda Hering, Texas A&M
University, Powering up with Space-Time Wind
Forecasting

February 17, 2009, Prof. Haya Kaspi, Israeli Institute
of Technology, Haifa, Israel, Measure Valued
Processes in the Asymptotic Approximation of Many
Servers Queues

March 4, 2009, Prof. Henry Schellhorn, Claremont
Graduate University, An Algorithm for the Pricing of
Path-Dependent American Options Using Malliavin
Calculus

April 15, 2009, Prof. Guillaume Bonnet , UCSB,
Nonlinear Stochastic PDEs for Highway Traffic Flows:
Theory and Calibration to Traffic Data

April 22, 2009, Prof. Douglas Steigerwald, UCSB
Economics Department, SUBSAMPLE TESTS FOR
REGIME SWITCHING

May 6, 2009, Prof. F. Gregory Ashby, Department of
Psychology, UCSB), A Neurocomputational Theory of
Context Learning During Skill Acquisition

May 20, 2009, Prof. Marco Frittelli, University of
Milano, Italy, Conditional certainty equivalent and
representation of risk measures

June 25, 2009, Professor Ingram Olkin , Professor of
Statistics and of Education, CHP/PCOR Fellow,
Stanford University

CRFMS (Center for Research in Financial Mathematics and Statistics)

The CRFMS provides a new environment that brings together the academic and financial communities. The combination of the two communities will increase the diversity of research and teaching at UCSB.

Thanks to donors of CRFMS
Skylar Technology
Santa Barbara Asset Management
Robert and Barbara Lowes

Seminars

September 29, 2008, Robert Gingrich, PIMCO, Newport Beach, CA, Systemic Credit Risk: What is the Market Telling Us?

October 13, 2008, David Nualart, Kansas University, Fractional Brownian motion: Stochastic calculus and applications.

October 20, 2008, Ioannis Karatzas, Columbia University, Volatility Stabilization, Diversity and Arbitrage in Stochastic Finance

October 27, 2008, Raj Sau, UCSB, Hedging in Models with Jumps and Transaction Costs - a survey

November 5, 2008, Michael Ludkovski, UCSB, Optimal Risk Sharing under Distorted Probabilities

January 12, 2009, Josh Davis, PIMCO, Newport Beach, CA, Robust Bayesian Portfolio Construction

January 23, 2009, Konstantinos Spiliopoulos, University of Maryland, Reaction-Diffusion Equations with Nonlinear Boundary Conditions in Narrow Domains

January 26, 2009, PUBLIC LECTURE at 4PM, Corwin Pavilion, followed by a reception, Arnold Miyamoto, CitiGroup, Managing Director CitiFX, Overview on Foreign Exchange and Capital Markets

February 9, 2009, Prof. Masaaki Kijima, Graduate School of Economics, Tokyo Metropolitan University, Risk Management and the Pricing of CDOs Based on the Multivariate Wang Transform

March 4, 2009, Prof. Henry Schellhorn, Claremont Graduate University, An Algorithm for the Pricing of Path-Dependent American Options Using Malliavin Calculus

April 6, 2009, Mihai Sirbu, UT Austin, Asymptotic analysis of utility-based prices and hedging strategies for utilities defined on the whole real line

April 13, 2009, Soumik Pal, University of Washington, Two models of equity markets and the distribution of market weights

April 20, 2009, Carole Bernard, University of Waterloo, Path-dependent inefficient strategies and how to make them efficient

April 27, 2009, Xin Guo, UC Berkeley, Connecting singular controls and switching controls, with applications

May 4, 2009, Paolo Guasoni, Boston University, Two and Twenty: what Incentives?

May 18, 2009, Matheus Grasselli, McMaster University, Chaotic Interest Rate Model Calibration

May 20, 2009, Prof. Marco Frittelli, University of Milano, Italy, Conditional certainty equivalent and representation of risk measures

Research Interests

GUILLAUME BONNET

Research interests include: statistical analysis of high dimensional data and infinite dimensional probability models with applications in population genetics and Internet traffic.

ANDREW CARTER

Research interests include: asymptotic statistical inference, comparisons of statistical experiments, density estimation and nonparametric function estimation.

JANOS ENGLANDER

Research interests include: working on problems related to different kinds of spatial stochastic processes with a strong emphasis on their relation to linear and nonlinear partial differential equations. As far as applications concerned, my main interest lies in different models of mathematical finance.

RAYA FELDMAN

Research interests include: stochastic differential equations with non-Gaussian noises, time series, filtering problems.

JEAN-PIERRE FOUQUE

Research interests include Stochastic Processes, Stochastic Partial Differential Equations, Waves in Random Media, Financial Mathematics.

DAVID V. HINKLEY

Research interests include: resampling methods, model selection, nonparametric curve fitting (including wavelet methods), comparisons between objective Bayes and frequentist inference.

DAWN HOLMES

Main research interest is Bayesian Networks. Recent work in this area includes estimating priors using the maximum entropy formalism, quantum computing and maximum entropy in Gaussian networks. Other interests include: How humans process causal knowledge, foundations of Bayesianism, Brouwer's programme and intuitionistic Markov chains. Issues in statistical education.

JOHN HSU

Dr. Hsu continues to work on Bayesian estimation of covariance matrices. The Bayesian estimation for the linear mixed effects models, with a very flexible prior structure, has been fully developed. He is also working on a project of Bayesian methods in estimating ordered mortality rates. The project is interesting, however, the computation is challenging due to the constraints of the parameters.

S. RAO JAMMALAMADAKA

Dr. Jammalamadaka continues to be interested on topics related to directional data, spacings and nonparametric goodness-of-fit. As part of the ITR project on biomolecular images, techniques of clustering and pattern recognition for high-dimensional data were investigated.

MICHAEL LUDKOVSKI

Research interests are applied probability and stochastic control, especially with applications to financial mathematics and insurance.

WENDY MEIRING

Research interests include: spatial/temporal data analysis, geophysical model evaluation, and functional data analysis in the environmental sciences.

YUEDONG WANG

Research interests include: smoothing spline, smoothing spline ANOVA, generalized linear model, mixed-effects models, model selection, survival data, longitudinal data, spatial-temporal data, computational statistics, statistical software, microarray data analysis and biostatistical modeling (circadian rhythm, hormone pulses).

Committees and Service

Department Chair

Yuedong Wang

Academic Advising Committees

Undergraduate Programs

S.R. Jammalamadaka, Director of Undergraduate
Studies

Dawn Holmes, Undergraduate Advisor

Graduate Programs

Drew Carter, Graduate Advisor

John Hsu, Recruiting and Admissions

Seminars

Department: Wendy Meiring

CRFMS: Jean-Pierre Fouque

Faculty Computer Liaison

Guillaume Bonnet

Concurrent Enrollment Liaison

Dawn Holmes

TA Training

Dawn Holmes, Coordinator

Nate Bennett, Lead TA

PSTAT 5A/5E Coordinator

Dawn Holmes

Qualifying Exam Committees

Applied Statistics

Yuedong Wang, Chair

John Hsu

Wendy Meiring

Theoretical Statistics

David Hinkley, Chair

Drew Carter

S.Rao Jammalamadaka

Probability

Raya Feldman, Chair

Janos Englander

Guillaume Bonnet

Search Committee

Yuedong Wang

Wendy Meiring (Affirmative Action)

David Hinkley

John Hsu

Statistical Laboratory

S.R. Jammalamadaka, Director

Student Representative

Richard Harang

Gani Dissertation Prize Committee

Lowes Scholarship

Dawn Holmes, Administrator

Library Representative

Janos Englander

University Committees

***College of Letters and Science Executive Committee,
(Secretary)***

David Hinkley

Faculty Legislature Representative

Janos Englander

UCSB University Fellowship Committee

John Hsu

Member, Committee on Academic Personnel

S.Rao Jammalamadaka

Dean's Panels

Dawn Holmes, Faculty Panelist

Mathematical Association of America

Dawn Holmes, Department Liaison

Contact Information

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Graduate Program: Rickie Lazzerini
lazzerini@pstat.ucsb.edu



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