Greetings to friends and alumni of the Department of Operations Research and Financial Engineering!

Welcome from Acting Chair, Professor Ronnie Sircar

This is a great year to be acting chair of the ORFE department at Princeton. We are flourishing like never before and in several different ways: we have made exciting new appointments and promotions; we have settled into a terrific new building, Sherrerd Hall; our faculty’s research continues to attract international attention and recognition; we had a record yield of 63% graduate PhD acceptances; and our undergraduate numbers and enrollment remain high (54 Seniors, 61 Juniors and 50 Sophomores). The tougher economic conditions present many challenges to the department and the university, but thanks to an excellent department manager and staff, we are surviving the period of budget cuts with minimal reduction, while maintaining the quality we all expect.

This holiday newsletter is intended to keep you, our alumni and community, informed about our recent activities. The ORFE department turns ten years old this academic year -- I look forward to seeing all of you at the ORFE@10 anniversary on Friday, April 23, 2010. We shall have stimulating alumni panels on Energy and Climate Change, Finance and the Financial Crisis, a keynote lecture and, most importantly, a cocktail reception in our new building followed by a banquet. If you have not done so already, please mark your calendars and register at http://orfe.princeton.edu/orfe10.

This year, we welcomed Professor Ramon van Handel as an Assistant Professor. Ramon had previously been with us as a Postdoctoral Associate in the Research Training Group (RTG) in Stochastic Analysis and Applications, following a PhD in Physics from Caltech. He is an expert in Stochastic Analysis and Filtering Theory, and is already widely recognized for having resolved a notorious gap in the 40-year old proof of Kunita’s ergodic theorem. Professor Patrick Cheridito was promoted to Associate Professor with tenure -- he adds enormously to our strengths and reputation in Financial Mathematics and Stochastics. We are delighted to add three of our distinguished Princeton colleagues as Associated Faculty in ORFE: Professor Markus Brunnermeier (Economics), Professor John Storey (Molecular Biology) and Professor Wei Xiong (Economics).

A number of postdocs joined the department in 2009:

- Dr. Selin Damla Ahipasaoglu is working with Professor Alexandre d’Aspremont. She received her Ph.D. from Cornell, and is a specialist in Convex Optimization, especially first-order methods for large scale problems.
- Dr. Michael Coulon joins the RTG after his PhD at Oxford; he is a specialist in energy and commodities markets and will teach ORF 335 (Introduction to Financial Mathematics) in the Spring.
- Dr. Marco Cuturi is working with Professor Alexandre d’Aspremont; he is a specialist in machine learning and is teaching ORF 522 (Linear Optimization) currently.
- Dr. Shaojun Guo is visiting Professor Jianqing Fan and the Statistical Laboratory as a visiting postdoctoral research associate from the Chinese Academy of Sciences, Beijing. His research interests are in survival analysis, analysis of longitudinal and functional data; non- and semi-parametric modeling; measurement error models; and high-dimensional data analysis.
- Dr. Xu Han is working with Professor Jianqing Fan. He recently received his PhD in Statistics from the Wharton School, University of Pennsylvania. His research interests are in statistical
decision theory and casual inference, and he is teaching ORF 505 (Time-Series & Regression) currently.

- Dr. Ning Hao is working with Professor Jianqing Fan. He recently received his PhD in Mathematics from Stony Brook University. His research interests include: high dimensional statistical learning, empirical process, algebraic statistics and geometry.

We also welcomed a young ORFE family member -- Eric Rudloff (born on November 8th, 2009 at 7 lbs. 4 ozs, 21 inches); his parents Professor Birgit Rudloff and Dr. Andreas Hamel are taking great care of him in between sharing the teaching of ORF 435.

Finally, we bid a fond farewell to Professor Savas Dayanik and his family. After seven years with ORFE, Savas returned to his native Turkey to become a faculty member at Bilkent University. We wish him well.

In the following pages you will read about some of the notable achievements of our faculty and students. Please keep our student affairs office (klupinac@princeton.edu) informed about address and job changes. Most of all, I hope we will be able to catch up in person at ORFE@10 on April 23rd. We look forward to seeing you and hearing from you.

Undergraduate News

The Class of 2012 confirms once again that ORFE is a highly desirable undergraduate major. This past spring, 54 sophomores signed up to major in the department (16 women and 38 men). Currently the total undergraduate enrollment is 165.

The ORFE Class of 2009 had 56 students. Four graduated with Highest Honors; ten High Honors and eleven Honors. The majority (24) took positions in the financial services industry. Ten students headed directly to graduate school. Three chose teaching while four became management consultants. Three students had several choices and have not yet decided what to do, while twelve students’ plans were not known (no responses).

Certificates were awarded in: Applications of Computing (15); Applied and Computational Mathematics (4); Engineering and Management Systems (33); Environmental Studies (1); Finance (25); Chinese (1); Japanese (1).

General and Departmental Prizes

The Frank S. Castellana Prize for “Outstanding scholarship and academic achievement” was awarded to Diana Negoescu. Her Senior Thesis was entitled “Optimal Learning for Drug Design in Ewing’s Sarcoma” and was advised by Professor Powell.

The Kenneth H. Condit Prize for “Leadership through academic achievement and community service” was awarded to Jonathan Lange. His Senior Thesis, “An Analysis of the Effects of News on Stock Returns Using Support Vector Machines” was advised by Professor d’Aspremont.

The Ahmet S. Cakmak Prize for “Innovative research and an exceptional senior thesis” was awarded to Scott Chacon and Yao Wang. Scott’s thesis, “Analysis, Characterization, and Visualization of Freeway Traffic Data and the Effect of Driver Behaviors on Traffic Flows” was...
advised by Professor Kornhauser. Yao’s thesis was entitled “Lost Decade 1999 - 2008: The Case for Multi-Strategy Investment Management”, and was advised by Professor Mulvey.

The Sigma Xi Book Award was awarded to Gordon Scharf for an outstanding senior thesis that exemplifies the standards of Sigma Xi, the National Scientific Research Society. His thesis, “Grade Rank: A Mathematical approach to Contextualizing Grades”, was advised by Professor Vanderbei.

Prizes and awards from outside the department were awarded as follows. Diana Negoescu won the Calvin Dodd McCracken Senior Thesis Award. In the Athletic Prizes category there were three recipients. David Palms ‘11, received The Coach’s Trophy; Matthew B. Grabowski ‘11 received both The Coach’s Trophy and the Edward J. Donovan Award for Baseball; Pawel R. Buczak ‘11 received The B. Franklin Bunn Trophy in Basketball; Christopher Vasic ‘09 received The Morgan Award in Wrestling.

**PORS**

The Princeton Operations Research Society (PORS) continues to provide vital services to the undergraduate program. Some of this year’s activities include helping underclassmen with course selection, representing the ORFE department at the Princeton Majors Fair, and supporting seniors as they begin to write their thesis. To date, PORS has held two meetings. Its first meeting was held on October 17th. New members received a description of the organization and the events it has arranged in the past along with potential events for the year. Then, on November 20th, PORS hosted an information session for the consulting firm Accenture. The annual PORS internship panel will be held in early February of next year to provide guidance to students looking for internships in ORFE-related fields. PORS is also continuing its tradition of excellent study breaks.


**Graduate News**

In September, the department welcomed ten new Ph.D. students. They hail from Bulgaria, Chile, China, Italy, France, Turkey, and USA. Four of them obtained their undergraduate degrees from colleges and universities in the United States -- Washington, Princeton, University of Pennsylvania and Cornell; two from China -- Peking University, Tsinghua University.; one from France -- Ecole Polytechnique; one from Turkey --Bilkent University; one from Italy -- Padua University and one from Chile -- University of Chile. The department also welcomes a one year Master of Engineering student.

In 2009, nine ORFE students successfully defended their Ph.D. theses:

- Yue Niu’s thesis “Validation Tests And Genewise Variance Estimation For Microarray Data” was advised by Professor Fan. She took an academic position in the department of Mathematics at The University of Arizona.
- Kazutoshi Yamazaki’s thesis “Essays on Sequential Analysis: Multi-Armed Bandit with Availability Constraints and Sequential Change Detection and Identification” was advised by Professors Dayanik and Powell. He took an academic position at Osaka University.
• Ronny Luss’s thesis “Mathematical Programming for Statistical Learning with Applications in Biology and Finance” was advised by Professor d’Aspremont. He took an academic position in the department of Statistics and Operations Research at Tel Aviv University.

• Peter Frazier’s thesis “Knowledge-Gradient Methods for Statistical Learning” was advised by Professor Powell. He took an academic position in the department of Operations Research and Information Engineering at Cornell University.

• Mitja Stadje’s thesis “Dynamic Risk Measures and Backward Stochastic Differential Equations: From Discrete to Continuous Time” was advised by Professor Cheridito. He took an academic position at Eurandom at the Technical University of Eindhoven, to be followed by a position in the department of Mathematics at the University of Michigan.

• Jingjin Zhang’s thesis “Asset Allocation with Gross Exposure Constraints and Factor Selection” was advised by Professor Fan. He took a position at Barclays Capital.

• Woo Chang Kim’s thesis “Re-engineering Financial Planning for Institutional Investors” was advised by Professor Mulvey. He took an academic position in the Industrial and Systems Engineering Department at the Korean Advanced Institute of Science and Technology.

• Sergey Nadtochiy’s thesis “Market Models for European Options: Dynamic Local Volatility and Tangent Levy Models” was advised by Professor Carmona. He took an academic position at the Oxford-Man Institute of Quantitative Finance, University of Oxford.

• Mehmet Bilgili’s thesis “Clustering Techniques and Multi-Regime Stochastic Optimization with Applications in Finance” was advised by Professor Mulvey. He took a position at Verition Fund Management.

• Wentao Yan received an MSE degree. He was advised by Professor Fan.

Workshops and Seminars

There were two very successful conferences organized by ORFE faculty at Princeton this year. The 5th Oxford-Princeton workshop on Financial Mathematics & Stochastic Analysis was held on March 27th & 28th in Sherrerd Hall. The Oxford-Princeton Workshops are held approximately every eighteen months as an opportunity for leading groups of researchers in, primarily, mathematical and computational finance from Oxford University and Princeton University to collaborate and interact. The series is organized by the Oxford-Man Institute, the Oxford Mathematical and Computational Finance Group, the Department of Operations Research and Financial Engineering and the Bendheim Center for Finance.
This year the organizers were Ronnie Sircar (Princeton), Vicky Henderson (Oxford-Man Institute). Speakers included Rene Carmona (Princeton), Paul Glasserman (Columbia), Vicky Henderson (Oxford), Sam Howison (Oxford), Hanqing Jin (Oxford), Jakub Jurek (Princeton), Dmitry Kramkov (Carnegie Mellon & Oxford), Michael Monoyios (Oxford), John Muvley (Princeton), Jan Obloj (Oxford), Christoph Reisinger (Oxford), Ramon van Handel (Princeton), Wei Xiong (Princeton), and Xunyu Zhou (Oxford).

Student speakers were Nikolay Aleksandrov (Oxford), Alok Gupta (Oxford), Xuedong He (Oxford), Gechun Liang (Oxford), Sergey Nadtochiy (Princeton), Mitja Stadje (Princeton), Ke Yu (Princeton), Forrest Zhang (Princeton) and Joe Yang (Princeton).
The second workshop was organized by Professor Jianqing Fan: the 2nd Princeton Humboldt Finance Workshop. The workshop was held October 30th and 31st in Sherrerd Hall. This program focused on Perceiving and Measuring Financial Risk: Credit, Energy and Illiquidity. Sponsors included Operations Research and Financial Engineering, Princeton University, Bendheim Center for Finance, Princeton University, Collaborative Research Center 649, Humboldt University, Wirtschaftswissenschaftliche Gesellschaft, Humboldt University and Quantitative Products Laboratory, Deutsche Bank AG & Humboldt University and Technical University, Berlin.

Speakers included Markus Brunnermeier, Rene Carmona, Gokhan Cebiroglu, Patrick Cheridito, Wolfgang Haerdle, Gregor Heyne, Ulrich Horst, Jianqing Fan, Peter Kratz, Michael Kupper, Brenda Lopez, Santiago Moreno, Ostap Okhrin, Lei Qi, Birgit Rudloff, Yacine Ait-Sahalia, Melanie Schienle, Ronnie Sircar, Song Song, Vladimir Spokoiny, Wei Xiong, Dacheng Xiu

Prof. William A. Massey organized the 15th Conference for African American Researchers in the Mathematical Sciences (CAARMS15) in Houston, Texas. The conference was held from June 23-26, 2009. It was hosted by Rice University and events were held on the Rice University campus. Sponsors for this event were Rice University, Princeton University, National Science Foundation, National Security Agency, NSF Training Grant for Stochastic Analysis and Applications, NSF Engineering Research Center for Mid-Infrared Technologies for Health and the Environment (MIRTHE), Rice-Houston Alliances for Graduate Education and the Professoriate (AGEP) and Morgan Stanley. The CAARMS meetings provide a forum where minority researchers in the mathematical sciences can meet each other and find out about their work across different mathematical fields. This forum also serves as a place to meet and mentor minority graduate students as well as encourage them to obtain doctoral degrees.
Congratulations

**Sherrerd Hall** was dedicated on April 4th in honor of the late John J.F. (Jay) Sherrerd '52, one of Princeton’s most active and devoted alumni.

**Professors** Erhan CINLAR, Andreas HAMEL, Philippe RIGOLLET, and Andrzej RUSZCYNISKI on the Commendations for Outstanding Teaching during the Spring 2009 semester. Also making the list were ORFE Graduate Students Jared KLYMAN and Lei QI, as outstanding AIs for ORF 335 and ORF 504 respectively.

**Professor Rene CARMONA**, Paul Wythes ’55 Professor of Engineering and Finance was selected as a Fellow of the Society for Industrial and Applied Mathematics.

**Castle Laboratory** for receiving the 2009 Daniel H. Wagner Prize. **Dr. Hugo SIMAO** and **Professor Warren POWELL** were recipients of the 2009 Wagner Prize awarded by INFORMS for applications which make a methodological contribution.

**Professor Alex d’ASPREMONT** received the National Science Foundation CAREER Award. The CAREER Award is the most prestigious award from the NSF in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.

**Professor Jianqing FAN**, Frederick I. Moore Class of 1918 Professor in Finance, is a 2009 recipient of the Guggenheim Fellowship Award. His project title is “Feature selection and statistical learning in ultrahigh dimensional space”.

**Professor Alain KORNHAUSER** gave the keynote address at the 34th Trenton Computer Festival and Hamfest, the longest continuously running personal computer show in the world. He spoke on “The Car of Tomorrow”, a truly autonomous highway vehicle that can drive itself.

**Professor William MASSEY** was honored for his efforts to support underrepresented minorities in the fields of science and technology. He received Princeton University’s MLK Day
Journey Award, which recognizes efforts to continue the journey to achieve Martin Luther King Jr.’s vision for America.

**Professor Ramon van HANDEL** was awarded the 2009 SIAG/CST Best SICON Paper Prize at the SIAM Conference on Control and Its Applications (CT09).

**Professors Rene CARMONA** and **Ronnie SIRCAR** are founding co-Editors-in-Chief of the Society for Industrial and Applied Mathematics (SIAM)’s newest journal: SIAM Journal on Financial Mathematics.

**Professor Rene CARMONA** goes green in ORF 405: Regression & Applied Time Series, by going paperless.

**Diana NEGOESCU** ’09 and **Peter FRAZIER** *09 have received honorable mention in the first 'Doing Good or Good OR' competition sponsored by Informs. The competition recognizes students for student groups whose projects are likely to have a significant impact on society through the application on operations research methods. Their project addressed the problem of sequencing the testing of different compounds in the search for drugs to effectively treat Ewing’s Sarcoma.

**Ilya RYZHOV** was one of six graduate students honored at the annual Association of Princeton Graduate Alumni Teaching Awards in recognition of his outstanding teaching abilities.

**Matthew CONNOR** '11 wins $100,000 grant for diabetic iPhone App. Matthew worked with his brother Michael, a 2007 graduate of Washington University in St. Louis, to develop an iPhone application to help diabetics manage their disease. The grant was awarded to expand their initial application into a Web-based tool to help diabetics stay healthy, and make it easier for doctors to monitor diabetic patients and for researchers to study treatments for the disease.

**Evans XIANG** '10 was announced as a co-recipient of the university’s George B. Wood Legacy Junior Prize, which is given to a member of the senior class in recognition of exceptional academic achievement during the junior year.
Happy Holidays!

Faculty

René Carmona
Patrick Cheridito
Erhan Çinlar
Alexandre d’Aspremont
Jianqing Fan
Alain Kornhauser
William Massey
John Mulvey
Warren Powell
Philippe Rigollet
Birgit Rudloff
Ronnie Sircar
Robert Vanderbei
Ramon van Handel

Staff

Michael Bino
Belgacem Bouziaine-Ayari
Connie Brown
Lisa Glass
Zoya Kramer
Kimberly Lupinacci
Hugo Simao
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Kelly Uçkun
Tara Zigler

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