Professor: Frederi Viens, Chair, Department of Statistics and Probability

Project: Africa's Great Oasis: Attribution of Lake Chad's Variability to Human & Environmental Factors

Subject Areas: Computational Bayesian statistics, environmental science, agro-ecosystem services, policy recommendations

Project Description:

Prof. Viens has been leading a group of scholars and students since 2013 to understand interactions between the complex hydrology of Lake Chad in the Eastern Sahel, its potential for ecosystem services, the impact of smallholder farmer irrigation in its basin, and the possible connections to global climate change. A short broad-audience summary of the current state of his research can be found in the recently published edited article in The Conversation:


Pending peer-reviewed publication, Viens’s team has already established that there is no evidence suggesting that global change is directly responsible for variability in Lake Chad’s hydrology. They also find preliminary evidence that farmer irrigation activities are very unlikely to have any negative consequence on the lake; more work should be done in this direction to solidify the conclusion, and provide policy recommendations on agriculture development in the basin. Many hypotheses remain to be tested. One is whether the lake in a relatively low state provides an optimal set of ecosystem services to fishermen, pastoralists, and farmers. Another is whether population growth and economic gains in the region may drive the lake’s resources into unsustainability in the coming decades. The African Futures early-career scholar would engage with Viens and colleagues on all these research aspects, and would help coordinate work by undergraduate, MS, and Ph.D. students at MSU and other institutions.

The project’s main analytical tool is computational Bayesian statistics, a form of supervised machine learning. It originates from an idea by the English vicar Thomas Bayes in the 18th century, but only in the last 20 years have modern computers become fast enough to handle the computations needed in most contexts. Any scientific scholar with mathematical training at the level of an undergraduate degree, and with some programming experience, will be capable of mastering the basic data science tools. This includes classical linear Bayesian hierarchical modeling, and its numerical implementation using the so-called Gibbs sampler, one of an array of so-called Markov-Chain Monte-Carlo techniques. At the same time, the Bayesian paradigm leaves open a number of theoretical questions, about statistical uncertainty quantification, which are relevant to Viens’s Lake Chad project, and which would satisfy the desires of a mathematical scientist to dig deep into theory, if that is a desired direction.

The AAP priority areas covered by this project include: 1. Agri-food systems; 2. Water, energy and environment; 6. Nutrition and health. Other priority areas could also be included, if needed.

Beyond the computational data analysis and coordination work summarized above, the early-career researcher will also help Viens with writing publications as a co-author, composing grant applications, and will have opportunities to participate in other Africa-centric data-science activities.
Frederi G. Viens
Professor and Chair
Department of Statistics and Probability, Michigan State University
619 Red Cedar Rd., East Lansing, MI 48824
viens@msu.edu +1 (517) 353 3233
http://www.stt.msu.edu/~viens/

Education
Maîtrise de Mathématiques Pures Unversité de Paris VII, France, Oct 1991
Master in Mathematics University of California, Irvine, Dec 1991
Ph.D. in Mathematics University of California, Irvine, June 1996

Previous and present positions
1997-2000. Assistant Professor (tenure track) University of North Texas, Department of Mathematics.
2017-pres. Interim Director Michigan State University, BS in Actuarial Science
2018-pres. Interim Adjunct Director Center for Statistical Training and Consulting (MSU)

Awards and honors
1996 U.C. Irvine Connelly Award for best Mathematics teaching assistant
1996 Honorary Fellow, University of Wisconsin, Probability Internship Program
1996-1997 NSF International Opportunities Fellow, Universitat de Barcelona, Spain
1997-2000 UNT Faculty Research Award Grants (Internal)
1998-1999 NSF-NATO Postdoctoral Fellow, Université de Paris VI, France
2001,05,06,08,10,11,14 Purdue Research Foundation International Travel Grants (Internal)
2002 Purdue Research Foundation Summer Faculty Grant (Internal)
2002,04,08,13 Purdue Research Foundation Graduate Research Assistantship (Internal)
2002-2006 NSF Standard Grant (Program in Probability), summer salary and travel
2004 Fulbright Scholar, Research and Lecturing grant, U. de Paris XIII, France
2006-2010 NSF Standard Grant (Program in Probability), salary, travel, grad support
2005,07,08,09,11,13 NSF Conference Grants (Proba, Applied Math), travel for speakers and students
2008 Purdue College of Science Graduate Student Mentoring Award
2008-2012 NSERC Grant Selection Committee member, Math and Stat, Canada
2009-2013 NSF Standard Grant (Program in Probability), salary, travel, consultants.
2010-2011 Franklin Fellow, U.S. Department of State, Washington DC, Science Adviser
2011-2012 NSERC Grant Selection Committee Chair, Pure Mathematics, Canada
2012 Purdue College of Science Team Award, for the Computational Finance Program
2013-2014 MEC Competition, Ministry of Education, Science and Technology, Chile
2013 Sigma Xi, The Scientific Research Society, member
2013 Institute of Mathematical Statistics, Fellow
2013 Purdue College of Science Research Award, inaugural year
2013 Seminar on Stochastic Processes, Scientific committee long-term member
2014-2015 Purdue Faculty Fellowship for Study in a Second Discipline (Agricultural Economics)
2014-2018 NSF Standard Grant (Program in Probability), salary, travel, consultants.
2017-present Seminar on Stochastic Processes, Scientific committee moderator
2018-2021 ONR Standard Grant (recommended for funding), salary, travel, grad support.
Research interests

Probability Theory and Stochastic Analysis:
Stochastic PDEs
Malliavin Calculus
Regularity of Random Fields
Fractional Brownian Motion
Stochastic Volatility
Monte-Carlo and particle methods
Nonlinear Stochastic Filtering
Products of Random Matrices
Stochastic control

Other Fields:
Quantitative Finance
Actuarial Science
Climate Science
Spin Glasses
Parameter estimation
Bayesian statistics
Time Series
Land use, food security
Hydrology
Nuclear physics
Human medicine

Professional membership

- American Mathematical Society (AMS)
- Institute of Mathematical Statistics (IMS)
- Sigma Xi, the Scientific Research Society

Teaching experience

Undergrad lower division: College algebra, Matrix algebra, Calculus, Business calculus, Probability, Statistics.


Curriculum development

MSU programs in Actuarial Science and in Quantitative Risk Analytics: developer and Interim Director. Professional BS, mathematics, statistics, and computational training for the insurance industry.


New course: Numerical Methods for Stochastic Processes, with applications to problems in finance, filtering, and fluid dynamics, via particle methods.


New course: Introduction to Investment Science, an introduction to financial engineering for math and stat graduate students, covering CAPM theory, VaR, Mean-Variance Portfolio Management, Credit Risk, Volatility estimation...
Purdue Computational Finance Program: Developer and Director. Restructured the program, designing the MS requirements, coordinating courses in Math, Stat, Mgmt, IE, Econ, advising CF MS students in Math, Stat, Engineering, Econ, AgEcon, and organizing the 2000-2003 Computational Finance seminar.

New course: *Stochastic Partial Differential Equations*, A Ph.D.-research-level course on the Infinite-Dimensional Stochastic Analysis approach to SPDEs, including Gaussian regularity theory, almost-sure Lyapunov exponents, and other topics.

New course: *Stochastic PDEs and Fractional Brownian Motion*, continuation of previous course, including a complete introduction to Skorohod and pathwise integration w.r.t. fractional Brownian noise.

New course contents: *Stochastic Processes*: use of the Textbook by Daniel Revuz and Marc Yor on martingales and stochastic calculus; incorporation of advanced elements of Gaussian theory, including Skorohod integration.


New course: *Design and Analysis of Financial Algorithms*: a numerical analysis and programming course for CF MS students, including state-of-the-art quant. finance programming languages and algorithms.

New course: *Actuarial Science II*: incorporation of Black-Scholes theory into Actuarial Science preparatory course for exams MLC and MFE.

New course: *Malliavin Calculus I and II*: including fractional Brownian motion & financial math.

New course: *Malliavin Calculus and Stein’s method*: the analysis of Nourdin and Peccati.

Administrative experience

Associate Director, Computational Finance (CF) MS Program, Purdue University, 2000-2003.

Program restructuring, Design of CF MS requirements, Advising all students in CF MS program, Co-ordination of courses with Colleges of Engineering and Business, Organizing CF seminar.

Director, Computational Finance (CF) MS Program, Purdue University, 2003-2016.

Design and update of CF MS requirements, Advising all CF MS students, Administering all CF MS oral exams, Co-ordination of courses with Colleges of Engineering and Business, Organizing CF-related research conferences, Mentoring CF faculty.

Associate Director, Actuarial Science Undergraduate Program, Purdue University, 2007-2010.

Design of Society of Actuaries (SOA) MFE Exam preparatory course (Financial Economics), advising undergraduate majors in Actuarial Science, monitoring and aiding actuarial students in their internal and external scholarship applications, co-developing strategy on Purdue’s bid for SOA Center of Actuarial Excellence.


Formal administrative role: liaison between Africa Bureau and Bureau of Global Change (climate change). Informal administrative roles included: developing a network of State Department and other federal agency stakeholders with Africa- and Science/Technology-based portfolios; developing and covering the environment, sustainability, and energy portfolio for the Africa Bureau.

Co-Chair for Pure Mathematics, Mathematics and Statistics Evaluation Group, Discovery Grants Program, NSERC (Canada), 2011-2012.

Co-managed budget for the Evaluation Group, managed the evaluation of approx. 150 pure mathematics proposals, worked as liaison between evaluation group members and NSERC staff and leadership.
Member, Purdue University Council on global and policy engagement, 2012-2015.

Participated in development of new projects to increase Purdue University’s faculty engagement in international activities and impact on policy-making.

Member, Purdue College of Science Faculty Committee on Diversity, 2013-2015.

Discussed data-based strategies for changing attitudes about diversity in the sciences, increasing diversity of pools of qualified undergraduate, graduate, and faculty applicants.

Program Director, National Science Foundation, Division of Mathematical Sciences, 2015-2016.

Main director for Probability Program; other responsibilities included: joint panels with applied math, computational math, math bio, CAREER, FRG, MSII, INFEWS.

Chair, Department of Statistics and Probability, Michigan State University, 2016-present.

Interim Director, BS Program in Actuarial Science and Quantitative Risk Analytics, Michigan State University, 2017-present.

Publications


Preprints and submitted papers


Books, edited research volumes, and special issues


Invited professional visits

1. Universidad de Valparaíso, Chile, Centro CIMFAV, 2 months in summer 2014. Research.


4. Universidad de Valparaíso, Chile, Centro CIMFAV, 2 months in summer 2013. Research


8. Universidad de Valparaíso, Chile, October 2010. Research, consulting for the development of a Ph.D. program.


13. University of Valparaíso, Chile, Department of Statistics and centro CIMFAV, 4 months, May-August 2006. Research and lecturing.

14. University of Utah, Department of Mathematics, 1 week, April 2006. Research.


Lectures

Invited conference lectures

2. Stochastic Analysis Workshop (Banff Int’l Rsch Station), Oaxaca, Mexico, tentative, Sep 9-14, 2018.
4. Symposium on Optimal Stopping, Rice University, Houston, TX, June 25-29, 2018.
6. 8th Int’l Workshop on High-Dimensional Data Analysis, Marrakech, Morocco, April 9-13, 2018.
12. Special session on high-frequency data, Annual Meeting of the Statistical Society of Canada: Brock University in St Catherines, ON, May 29-June 1, 2016.
23. 6th CI2MA Focus Seminar on “Stochastic Modeling and Numerical Analysis”, Universidad de Concepción, Chile, Aug 8, 2013.

26. CIMPA school on Statistical methods and applications in finance and insurance, Principal lecturer, College of Science and Technology, Univ. Cadi Ayyad, Marrakech, Morocco, April 8-20, 2013.


30. 12th Latin American Congress of Probability and Mathematical Statistics (XII CLAPEM), Plenary address, Viña del Mar, Chile, March 26-30, 2012.


33. 3rd Africa Carbon Forum, Workshop on “Prioritizing mitigation actions through low carbon development planning”, Marrakech, Morocco, July 4-6, 2011.

34. 7th Seminar on Stochastic Analysis, Random Fields, and Applications, Ascona, Switzerland, May 23-27, 2011.

35. AMS Western Section Meeting, Special Session on Recent Developments in Stochastic Partial Differential Equations, Las Vegas, NV, April 30 – May 1, 2011.


38. AMS Western Section Meeting, Special Session on Financial Mathematics, Principal Speaker, Albuquerque NM, April 17-18, 2010.

39. Workshop on Stochastic PDEs. Isaac Newton Institute, Cambridge University, Jan 4-8, 2010.


42. AMS Southern Section Meeting in Huntsville, AL (Gaussian Analysis and Stochastic Partial Differential Equations). October 25-26, 2008.

43. Workshop on Differential equations driven by fractional Brownian motion as random dynamical systems, Banff International Research Station, Canada, Sep 28 - Oct 5, 2008.


53. AMS Central sectional meeting in Cincinnati, Ohio (Special Session on Financial and Actuarial Mathematics), Oct 21-22, 2006.

54. AMS Western sectional meeting in Salt Lake City, Utah (Special Session on Interface of Stochastic PDEs and Gaussian Analysis), Oct 7-8, 2006.

55. Invited Mini-course on Malliavin Calculus (Principal Speaker) at the Winter School on Stochastic Analysis and Applications of the Universidad de Valparaiso, Chile, July 3-7, 2006.


68. Workshop on Numerics and Stochastic, Fields Institute, Toronto, ON, Apr 20-24, 1999.
Contributed conference talks

10. Workshop on Stochastic PDEs and Applications, Jan 3-7, 1996. USC, Los Angeles, CA

Invited seminar lectures

3. Rice University, Statistics Colloquium, Houston, TX, Oct 1, 2017.
14. U. Illinois at Urbana-Champaign, Department of Statistics Colloquium, Urbana, IL, October 2, 2014.
15. Universidad Católica de Valparaíso, Departamento de Estadística, graduate lecture on statistics and climate change, Valparaíso, Chile, Aug 19, 2014.
16. Sun Yat-sen University, Colloquium, School of Mathematics and Computational Science, Guangzhou, China, July 25, 2014
23. Université de Paris 6, Séminaire de Maths Financières, June 6, 2013.
27. Wroclaw University of Technology, Wroclaw, Poland, Mathematics colloquium (3 lectures), June 28, 29, and July 2, 2012.
31. City University of New York, Graduate Center, Probability Seminar, Dec 6, 2011.
36. Pennsylvania State University, Probability Seminar, April 15, 2011
43. Université Paris Panthéon-Sorbonne, Séminaire de probabilités, June 12, 2009.
44. Michigan State University, Statistics and Probability Colloquium, April 10, 2009.
45. Université de Rennes, Séminaire de Probabilités, June 2, 2008.
46. Université de Paris 6, Séminaire de Probabilités, March 11, 2008.
47. Université de Paris 13, Séminaire de Probabilités, March 5, 2008.


60. Université de Paris 13, Séminaire de Probabilités, June 29, 2005.


63. Institut Elie Cartan, University de Nancy 1, Groupe de travail Brownien fractionnaire, April 30, 2004.


66. Université de Bretagne Occidentale, Séminaire de Mathématiques, June 4, 2002


69. Texas A & M University, College Station, Undergraduate Seminar, Oct 4, 2000.


78. Université de Paris XIII, Probability seminar, Feb 24, 1998


81. Université de Marseille, France, Probability seminar, Feb 1, 1997.
Outreach and Engagement

- Introductory lecture on Bayesian uncertainty quantification in climatology, agricultural economics, and astrostatistics; Andrews University, Berrien Springs, MI, Feb 24, 2017.
- Presentation to early-career researchers on strategies for publishing high-impact papers, Wiley Author Workshop, Joint Mathematics Meetings, Atlanta, GA, Jan 20, 2017.
- Non-technical lecture at Colegio Saint-Dominic, Viña del Mar, on professional opportunities in probability and statistics for high-school juniors and seniors, Valparaíso province, Chile, Aug 18, 2014.
- Two non-technical lectures in the conference series “Horizon Sciences” at the University of Paris 6, France, for first-year college students in Math, CS, Physics, and Engineering: Oct 15, 2013.
  - Les statistiques Bayesiennes et le changement climatique;
  - L’analyse stochastique et les marchés financiers mondiaux.
- Invitation by City of Wroclaw, Poland, to speak in “Visiting Professors” series on two outreach topics:
  - address a group of high-school and undergraduate students on professional opportunities in mathematics and statistics. Wroclaw University of Technology, Poland, June 29, 2012.
  - public lecture on newly developed economies’ foreign assistance strategies for the developing world, Wroclaw University of Technology, Poland, July 2, 2012.
- Pan-African Center for Mathematics, nomination to its Advisory Board on March 29, 2012. This center opened its doors in Dar-es-Salaam, Tanzania, in 2013, to graduate students in Mathematics (MS and Ph.D.) from across the African continent.
- Mentor for undergraduate and graduate students (“Scholars”) in the National Mathematics Alliance, starting in Fall 2011.
- Collaboration on uncertainty quantification in renewable energy projects in the Kingdom of Morocco, with a focus on Concentrated Solar Power (CSP), wind mapping, and electricity storage. Interacting with the Université Cadi Ayyad, Morocco’s Royal Academy of Science and Technology, and the World Bank. Started in July 2011, ongoing project.
- Mathematics tutor for a high-school senior, Pacers Academy (for teens in challenging social situations), Indianapolis, IN, Fall 2011 (25 hours).
- Science Adviser (Franklin Fellow), Department of State, Bureau of African Affairs, Office of Economic Policy (Washington, DC), working on climate change, energy, and environmental diplomacy, 2010-2011 (one year).
- Meeting with University Administrators and Science and Agriculture faculty on development strategy, Midlands State University, Gweru, Zimbabwe, August 20, 2010.
- Meeting with Science faculty on development strategy, University of Namibia, Windhoek, Namibia, July 20, 2010.
- Participation in the Discussion Panel “Statistics in a variety of forms”, at the Diversity in Mathematics conference in Cape Town, South Africa, July 17, 2010.
- High-School Science Fair judge: annual International School of Indiana Science Fair, Feb 23, 2009: judged 6th, 7th, and 8th graders science projects; spoke with students in English, Spanish, and French.
- High-School Science Fair judge: annual International School of Indiana Science Fair, Feb 17, 2007: judged 6th, 7th, and 8th graders science projects; spoke with students in English, Spanish, and French.
Internal seminar talks

Internal seminar talks include one or more talks in each of the following:

- Universitat de Barcelona, Seminari de Probabilitats
- University of North Texas
  - Mathematics Colloquium, Stochastic Lunch Seminar, Graduate Student Seminar
- Purdue University
  - Mathematics Advisory Board Council, Statistics Advisory Board Council, Statistics Colloquium, Probability Seminar, VIGRE-GAAN Seminar, Computational Finance Seminar, Science Freshman Honors Seminar, Mathematics Bridge to Research seminar, College of Science Great Issues course, Department of Agricultural Economics Colloquium.
- Michigan State University
  - Statistics and Probability Colloquium, FRIB Theory Group seminar, Probability Seminar, Quantum Information Science Forum.

Other Professional Activity

1. Founding Editor and Editor-in-Chief for High Frequency, 2016-present
2. Associate Editor for:
   - The Annals of Finance, 2005-present
   - Communications on Stochastic Analysis, 2007-present
   - Stochastics and Dynamics, 2010-present
   - ALEA (Latin-American Journal of Probability and Mathematical Statistics), 2012-present
   - Stochastics, 2015-present
   - Bernoulli, 2016-present
   - Electronic Journal of Statistics, 2016-present
3. Series Editor for:
   - Frontiers in Probability and the Statistical Sciences, Springer V. series
4. Reviewer of manuscripts for the following professional journals:
• Journals on other branches of the mathematical sciences, including

• Journals of wide scope in the mathematical sciences, including:

• Journals on physics and engineering

• Journals on earth sciences
  *Nature Communications, Geophysical Research Letters

5. Reviewer of book manuscripts for

• Brooks Cole
• Houghton Mifflin
• Springer V.

6. National Science Foundation, Panel Review member

• Graduate Research Fellowship Program in Mathematics, 2011-2012
• Stochastic Systems panel, 2010-11

7. National Science and Engineering Research Council (NSERC, Canada),

• Chair, Pure Math Section, Grant Selection Committee member for Mathematics and Statistics, 2011-2012
• Grant Selection Committee member for Mathematics and Statistics, 2009-2011.
• Grant Selection Committee member for Mathematics, 2008-2009.


10. Reviewer of grant proposals for:

• National Science Foundation
• National Security Agency
• National Science and Engineering Research Council (NSERC, Canada)
• Mathematics of Information Technology and Complex Systems (MITACS, Canada)
• U.S. Civilian Research & Development Foundation
• Simons Foundation Collaboration Grants for Mathematicians
• National Fund for Scientific and Technological Development (FONDECYT, Chile)
• American Society for Engineering Education

11. Reviewer for

• Mathematical Reviews
12. Book review for


13. Conference and Seminar Organizer and co-organizer:

- 8th International Workshop on High-Dimensional Data Analysis, Marrakech, Morocco, April 9-13, 2018
- 7th Conference on High Frequency Finance and Data Analytics: Nov 2-4, 2016, *Stevens Institute of Technology*, Hoboken NJ.
- Seminar on Stochastic Processes, March 16-19, 2016 *University of Maryland*, College Park, MD.
- *Seminar on Stochastic Processes*, Scientific Committee permanent member since 2013.
- *Purdue Probability Seminar*, Fall 2009.
- *Purdue Computational Finance Seminar*, Spring 2009
- Malliavin Calculus and Applications, *Kent State University*, August 7-12, 2008, Kent, OH.
• Kent-Purdue Minisymposium on Financial Mathematics, Kent State University, April 27-28, 2007, Kent, OH.

• Second Purdue Minisymposium on Financial Mathematics, Purdue University, April 15-16, 2005, West Lafayette, IN.

• Scientific program committee Chair, 26th Midwest Probability Colloquium, Evanston, IL, Oct 15-17, 2004.

• Purdue Probability Seminar, Fall 2004 - Spring 2006.

• First Purdue Minisymposium on Financial Mathematics, Purdue University, April 3, 2003, West Lafayette, IN.

• Special session on Stochastic Analysis with Applications, American Mathematical Society Sectional Meeting, April 4-6, 2003, Bloomington, IN.

• Purdue Computational Finance Seminar, 2000-2003.

• Special session on Probability, 4th Joint Meeting of the American Mathematical Society and the Sociedad Matemática Mexicana, May 19-24, 1999, Denton, TX.
### Postdoctoral mentees

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject / location</th>
<th>Dates</th>
<th>Mentor</th>
<th>Current Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprian Tudor</td>
<td>Probability / Purdue</td>
<td>Jan-May 2002</td>
<td>Viens</td>
<td>U Lille &amp; U. Paris Sorbonne (Prof. w/ tenure)</td>
</tr>
<tr>
<td>Oana Mocioalca</td>
<td>Probability / Purdue</td>
<td>2002-2004.</td>
<td>Viens</td>
<td>Kent State University (Assoc Prof. w/ tenure)</td>
</tr>
<tr>
<td>Léo Neufcourt</td>
<td>Statistics, Nuclear Physics, Family Medicine / MSU</td>
<td>August 2016 - August 2018</td>
<td>Viens</td>
<td>MSU Statistics and Probability</td>
</tr>
</tbody>
</table>

### Other visitors mentored

<table>
<thead>
<tr>
<th>Name</th>
<th>Fellowship Program</th>
<th>Dates</th>
<th>Mentor</th>
<th>Home Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bo Yi, Ph.D. student</td>
<td>China Scholar, Council</td>
<td>8/2012-12/2013</td>
<td>Viens</td>
<td>Sun Yat-Sen U. Guangzhou, China</td>
</tr>
<tr>
<td>K. Esselaï, Assoc Pr.</td>
<td>Fulbright Research Schol.</td>
<td>Jan-May, 2014</td>
<td>Viens</td>
<td>University of Kuwait</td>
</tr>
<tr>
<td>Léo Neufcourt, MS st.</td>
<td>Stage Polytechnique</td>
<td>May-July 2013</td>
<td>Viens</td>
<td>Columbia U. &amp; E. Polytechnique, France</td>
</tr>
<tr>
<td>Xiaohui Wang, Ph.D. st.</td>
<td>China Scholar, Council</td>
<td>10/2013-4/2015</td>
<td>Viens</td>
<td>South China University of Technology</td>
</tr>
<tr>
<td>Héctor Araya, Ph.D. st.</td>
<td>Conicyt Graduate Fellow</td>
<td>1/2015-3/2015</td>
<td>Viens</td>
<td>Universidad de Valparaiso, Chile</td>
</tr>
<tr>
<td>Ashraf Nourir, Ph.D. st.</td>
<td>Joint Supervis. Schol.</td>
<td>12/2014-12/2015</td>
<td>Viens</td>
<td>American University in Cairo, Egypt</td>
</tr>
<tr>
<td>Ailing Gu, Assoc. Pr.</td>
<td>China Scholar, Council</td>
<td>8/2015-2/2017</td>
<td>Viens</td>
<td>University of Guangzhou, China</td>
</tr>
<tr>
<td>Olivier Coudray, MS st.</td>
<td>Stage Polytechnique</td>
<td>April-Aug 2018</td>
<td>Viens</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Julien Chhor, MS st.</td>
<td>Stage Polytechnique</td>
<td>April-Aug 2018</td>
<td>Viens</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Clément Mantoux, MS st.</td>
<td>Stage Polytechnique</td>
<td>April-Aug 2018</td>
<td>Viens</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Ruihua Ruan, MS St.</td>
<td>Stage Polytechnique</td>
<td>April-Aug 2018</td>
<td>Viens</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Luyi SHEN, MS St.</td>
<td>Stage Polytechnique</td>
<td>April-Aug 2018</td>
<td>Viens</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Dennis Ikpe, Ph.D.</td>
<td>Teaching Devel. Grant</td>
<td>May-July 2018</td>
<td>Viens</td>
<td>U. of South Africa, U. of Pretoria</td>
</tr>
</tbody>
</table>

### Ph.D. major advisor

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>Ph.D. date</th>
<th>Advisor</th>
<th>Current Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ionut Florescu</td>
<td>Stat</td>
<td>Dec 2004</td>
<td>Viens</td>
<td>Stevens Inst. of Tech. (research associate professor)</td>
</tr>
<tr>
<td>Yalcin Sarol</td>
<td>Math</td>
<td>Aug 2005</td>
<td>Viens</td>
<td>U. Southern Indiana (associate professor, tenured)</td>
</tr>
<tr>
<td>Tao Zhang</td>
<td>Math</td>
<td>Dec 2006</td>
<td>Viens</td>
<td>Bank of America, NYC (investment banker)</td>
</tr>
<tr>
<td>A. Vizcarra</td>
<td>Math</td>
<td>May 2008</td>
<td>Viens</td>
<td>D5 Advisors, CT (hedge fund manager)</td>
</tr>
<tr>
<td>A. Chronopoulou</td>
<td>Stat</td>
<td>Dec 2009</td>
<td>Viens</td>
<td>University of Illinois (assistant prof. tenure track)</td>
</tr>
<tr>
<td>Nikita Tuzov</td>
<td>Stat</td>
<td>May 2009</td>
<td>Viens</td>
<td>AEGON Risk Group, Baltimore (financial engineer)</td>
</tr>
<tr>
<td>Ha-Young Kim</td>
<td>Math</td>
<td>May 2010</td>
<td>Viens</td>
<td>Samsung Research and Development (mathematician)</td>
</tr>
<tr>
<td>Joseph Zadeh</td>
<td>Math</td>
<td>May 2012</td>
<td>Viens</td>
<td>Greenplum Analytics (massive data scientist)</td>
</tr>
<tr>
<td>Richard Eden</td>
<td>Math</td>
<td>Aug 2012</td>
<td>Viens</td>
<td>Ateneo de Manila University (tenure track)</td>
</tr>
<tr>
<td>Luis Barboza</td>
<td>Stat</td>
<td>Dec 2012</td>
<td>Bo Li / Viens</td>
<td>Universidad de Costa Rica (tenure track)</td>
</tr>
<tr>
<td>Jishnu Jaganathan</td>
<td>Math</td>
<td>May 2014</td>
<td>Viens</td>
<td>Unknown</td>
</tr>
<tr>
<td>Rolando Navarro</td>
<td>Stat</td>
<td>Dec 2015</td>
<td>Viens</td>
<td>Options Clearing Corp., Chicago (quant researcher)</td>
</tr>
<tr>
<td>Yankeng Luo</td>
<td>Math</td>
<td>May 2015</td>
<td>Figueroa / Viens</td>
<td>Virginia Commonwealth University (instructor)</td>
</tr>
<tr>
<td>Baron Law</td>
<td>Stat</td>
<td>May 2015</td>
<td>Viens</td>
<td>Deloitte, NY (quantitative modeler)</td>
</tr>
<tr>
<td>Xin Zhang</td>
<td>Math</td>
<td>Aug 2016</td>
<td>Viens</td>
<td>Unknown</td>
</tr>
<tr>
<td>Fatimah Alshahrani</td>
<td>Stat</td>
<td>TBD</td>
<td>Viens</td>
<td>Michigan State University</td>
</tr>
<tr>
<td>Han Wang</td>
<td>Stat</td>
<td>TBD</td>
<td>Viens</td>
<td>Michigan State University</td>
</tr>
<tr>
<td>Vojtech Kejzlar</td>
<td>Stat</td>
<td>TBD</td>
<td>Maiti / Viens</td>
<td>Michigan State University</td>
</tr>
</tbody>
</table>

### MS major advisor

From Fall 2000 to Spring 2015, Viens has **graduated over100 MS students** at Purdue, in Computational Finance.
### Graduate committee member for local Ph.D. students

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>Degree</th>
<th>Advisor</th>
<th>Degree</th>
<th>Advisor</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bryan Scott</td>
<td>Civil Engr</td>
<td>Ph.D. 2002</td>
<td>R. Salgado</td>
<td>Song Yao</td>
<td>Math Ph.D. 2008</td>
<td>J. Ma</td>
</tr>
<tr>
<td>Adam Maung</td>
<td>AgEcon</td>
<td>Ph.D. 2001</td>
<td>K. Foster</td>
<td>Yusun Wang</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
</tr>
<tr>
<td>Xiaodong Sun</td>
<td>Math</td>
<td>Ph.D. 2001</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
<tr>
<td>Jianfeng Zhang</td>
<td>Math</td>
<td>Ph.D. 2001</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
<tr>
<td>M. Niederhausen</td>
<td>Math</td>
<td>Ph.D. 2005</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
<tr>
<td>Yuping Liu</td>
<td>Math</td>
<td>Ph.D. 2005</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
<tr>
<td>Youhu Yu</td>
<td>Math</td>
<td>Ph.D. 2006</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
<tr>
<td>Yuxuan Jien</td>
<td>Math</td>
<td>Ph.D. 2008</td>
<td>J. Ma</td>
<td>Math Ph.D. 2009</td>
<td>J. Ma</td>
<td></td>
</tr>
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</table>

### Graduate committee member for Ph.D. students at other universities

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>Degree</th>
<th>Advisor</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solesne Bourgain</td>
<td>Mathematics</td>
<td>Ph.D. 2011</td>
<td>C.A. Tudor</td>
<td>U. Paris Sorbonne</td>
</tr>
<tr>
<td>Peng Hu</td>
<td>Mathematics</td>
<td>Ph.D. 2012</td>
<td>P. Del Moral</td>
<td>U. Toulouse, France</td>
</tr>
<tr>
<td>Jorge Clarke</td>
<td>Math. Engineering</td>
<td>Ph.D. 2013</td>
<td>Torres, Tudor, Rodriguez</td>
<td>U. Valparaíso, Chile</td>
</tr>
<tr>
<td>Ashraf Noumir</td>
<td>Finance</td>
<td>Ph.D. 2015</td>
<td>Saad Motawea</td>
<td>American University Cairo, Egypt</td>
</tr>
<tr>
<td>Soukaina Douissi</td>
<td>Mathematics</td>
<td>Ph.D. TBD</td>
<td>Khalifa es-Sebaiy</td>
<td>{Fulbright Scholar, MSU and Cadi Ayyad U., Marrakech, Morocco}</td>
</tr>
<tr>
<td>Salwa Bajja</td>
<td>Mathematics</td>
<td>Ph.D. 2018</td>
<td>I. Ouassou</td>
<td>Cadi Ayyad U., Marrakech, Morocco</td>
</tr>
</tbody>
</table>

{Fulbright Scholar, MSU and Cadi Ayyad U., Marrakech, Morocco}
<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Title</th>
<th>Start and Duration</th>
<th>Amount</th>
<th>Role and Location</th>
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</thead>
<tbody>
<tr>
<td>NSF Research Grant, Statistics Program</td>
<td>Exact &amp; Asymptotic Distribution Thry for General Gaussian Processes</td>
<td>Aug 2018, 3 years</td>
<td>250,000</td>
<td>Role: co-PI (50%) Rice Univ.; MSU</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>MSU Symposium on Mathematical Statistics</td>
<td>May 2018, 1 year</td>
<td>25,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>ONR Research grant funding recommended</td>
<td>Statistical inference for stochastic processes with correlations</td>
<td>May 2018, 3 years</td>
<td>311,000</td>
<td>Role: co-PI (33%) Rice Univ.; MSU</td>
</tr>
<tr>
<td>NSF Research Grant, Probability Program</td>
<td>Topics in stochastic analysis and Malliavin calculus</td>
<td>July 2014, 5 years</td>
<td>150,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>5th Conference on Modeling High Frequency Data in Finance</td>
<td>Oct 24-6, 2013</td>
<td>40,000</td>
<td>Role: co-PI Stevens Inst.</td>
</tr>
<tr>
<td>Purdue U, Engagement Leave travel grant</td>
<td>Franklin Fellow / Science Adviser U.S. Department of State</td>
<td>Sep 2010, 9 months</td>
<td>30,000</td>
<td>Role: Fellow U.S. Dept. State</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>Int’l conference on Stochastic Analysis and Malliavin Calculus</td>
<td>Mar 19-21, 2011</td>
<td>27,260</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>Second Conference on Modeling High-Frequency Data in Finance</td>
<td>June 24-26, 2010</td>
<td>25,000</td>
<td>Role: co-PI Stevens Inst.</td>
</tr>
<tr>
<td>NSF Research Grant, Probability Program</td>
<td>Density and tail estimates via Malliavin calculus and applications</td>
<td>July 2009, 4 years</td>
<td>232,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF Research Grant, Probability Program</td>
<td>Stochastic analysis and random medium in continuous space and time</td>
<td>July 2006, 4 years</td>
<td>375,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>International conference on stochastic analysis</td>
<td>June 13-15, 2008</td>
<td>14,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>Kent-Purdue Minisymposium on Financial Mathematics</td>
<td>Apr 27-28, 2007</td>
<td>8,500</td>
<td>Role: co-PI Kent State</td>
</tr>
<tr>
<td>NSF conference grant</td>
<td>2nd Purdue Minisymposium on Financial Mathematics</td>
<td>Apr 15-16, 2005</td>
<td>7,500</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF Stand Rsch Grant, Probability Program</td>
<td>Stochastic PDEs: interrelation of local and long-term behavior, and representation</td>
<td>Sep 2002, 4 years</td>
<td>122,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>Fulbright U.S. Scholar Lecturing/Research</td>
<td>Stochastic PDEs: interrelation of local and long-term behavior</td>
<td>Feb 2004, 4 months</td>
<td>$12,000</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF-NATO Postdoc Fellowship</td>
<td>Lyapunov exponents for linear systems of stochastic PDEs</td>
<td>Jan 1998, 12 months</td>
<td>42,749</td>
<td>Role: PI</td>
</tr>
<tr>
<td>NSF Int’l Oppor. Postdoc. Fellow</td>
<td>Behavior of systems of stochastic PDEs</td>
<td>Sep 1996, 12 months</td>
<td>44,500</td>
<td>Role: PI</td>
</tr>
<tr>
<td>Hon. Fellow, Internship Program in Probability</td>
<td>Behavior of systems of stochastic PDEs</td>
<td>Jun 1996, 2 months</td>
<td>6,000</td>
<td>Role: PI</td>
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## Internal funding

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Title</th>
<th>Period</th>
<th>Amount</th>
<th>Role and Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purdue faculty fellowship for study in a second discipline</td>
<td>climate change and uncertainty quantification in agricultural economics</td>
<td>2014-2013</td>
<td>22,500</td>
<td>Role: PI Purdue Univ.</td>
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<tr>
<td>Purdue internal grants for research and travel</td>
<td>over 10 proposals funded since 2001</td>
<td>2001 to the present</td>
<td>&gt; 80,000</td>
<td>Role: PI Purdue Univ.</td>
</tr>
<tr>
<td>UNT Junior Faculty and Research Initiation grants</td>
<td>5 proposals funded in 3 years for summer salary</td>
<td>1998-2000</td>
<td>20,300</td>
<td>Role: PI Univ. N. Texas</td>
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