

Mark Francis Demers

Curriculum Vitae

Assistant Professor of Mathematics
Department of Mathematics & Computer Science
Fairfield University
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Education

- Courant Institute**, New York University, Ph.D. in Mathematics. 1998-2003
Awarded M.S. in Mathematics, May 2001.
- Amherst College**, B.A. *Magna Cum Laude* in Mathematics and English. 1990-1994
Senior Thesis: *Seeking Stability in Hamiltonian Systems with Two Degrees of Freedom.*

Ph.D. Thesis

Doctoral Thesis Advisor: Lai-Sang Young
Thesis Title: *Markov Extensions and Natural Conditionally Invariant Measures for Dynamical Systems with Holes.*

Research Interests

Statistical properties of dynamical systems and smooth ergodic theory; open systems and escape rates; models from mathematical physics.

Academic Appointments

- Postdoctoral Fellow**, Mathematical Sciences Research Institute January – May 2007
Berkeley, California
- Assistant Professor**, Fairfield University September 2006 - present
Fairfield Connecticut
- VIGRE Visiting Assistant Professor**, Georgia Institute of Technology 2003 - 2006
Atlanta, Georgia

Preprints and Publications

Markov extensions for dynamical systems with holes: an application to expanding maps of the interval, Israel Journal of Math. **146** (2005), 189-221.

Markov extensions and conditionally invariant measures for certain logistic maps with small holes, Ergod. Th. and Dynam. Sys. **25**:4 (2005), 1139-1171.

(with L.A. Bunimovich) *Deterministic models of the simplest chemical reactions*, J. Stat. Phys. **120** (2005), 239-252.

(with L.-S. Young) *Escape rates and conditionally invariant measures*, Nonlinearity, **19** (2006), 377-397.

(with C. Liverani) *Stability of statistical properties in two-dimensional piecewise hyperbolic maps*, submitted.

Talks

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| Workshop in Dynamical Systems and Related Topics, <i>Dynamics at the crossroads of modern mathematics: Recent progress and perspectives</i> , Department of Mathematics, Pennsylvania State University. | November 2006 |
| Dynamics Seminar, Department of Mathematics, Courant Institute, New York University. | September 2006 |
| Special Seminar, Department of Mathematics, IUPUI, March 2006. | March 2006 |
| Conference in Dynamical Systems and Smooth Ergodic Theory, University of Bordeaux, Bordeaux, France. | June 2005 |
| Young People's Seminar, Institut Henri Poincaré, Paris, France. | June 2005 |
| Ergodic Theory Meeting, Department of Mathematics, University of Surrey, Guildford, England. | May 2005 |
| Midwest Dynamical Systems Seminar, University of Minnesota. | April 2005 |
| Applied and Computational Math Seminar, School of Mathematics, Georgia Institute of Technology. | March 2005 |
| Center for Nonlinear Studies Seminar, Department of Physics, Georgia Institute of Technology. | February 2005 |
| Mathematical Physics Seminar, University of Rome, Tor Vergata, Rome, Italy. | June 2004 |
| CDSNS Seminar, School of Mathematics, Georgia Institute of Technology. | March 2004 |
| Special Seminar, School of Mathematics, Georgia Institute of Technology. | March 2003 |
| Graduate Student/Post Doctoral Seminar, Courant Institute, New York University. | March 2003 |
| Dynamical Systems Seminar, Department of Mathematics, SUNY Stony Brook. | February 2003 |

Grants, Honors, Fellowships

- Visiting Researcher**, Centro Ennio de Giorgi, May - July 2006
 Collegio Puteano, Scuola Normale Superiore, Pisa, Italy.
- Visiting Researcher.** May - June 2005
 Received funding to attend dynamical systems trimester at the Institut Henri Poincaré,
 Paris, France.
- Research Grant**, University of Rome, Tor Vergata, Rome, Italy. June 2004
- Fellowship**, Courant Institute, New York University. 1998-2003
 Full-time support for 5 years of study toward doctorate.
- Summer Research Support.** Summers 2001-2003
 Received grants to continue Ph.D. research through Courant Institute.
- Robert H. Breusch Prize**, Amherst College. 1994
 Awarded for best undergraduate thesis in Mathematics.
- Nominated to Sigma Xi**, Scientific Research Society 1994
- REU Grant**, National Science Foundation. Summer 1993
 Received support to participate in an REU program at Smith College.

Courses Taught

- Algebra II, *Marymount College* Summer 1999
- Discrete Math, *Courant Institute, New York University* Fall 1999
- Quantitative Reasoning, *New York University* Spring 2000
- Calculus I, *Courant Institute, New York University* Summer 2000, Spring 2001, Fall 2002
- Calculus II, *Courant Institute, New York University* Spring 2002
- Calculus III (Regular & Honors), *GT & Fairfield Univ.* Spring 2004, Spring 2005, Fall 2006
- Linear Algebra, (mixed grad. & undergrad.) *NYU & GT* Spring 2003, Fall 2003, Fall 2005
- Ordinary Differential Equations, *Georgia Institute of Technology* Fall 2004
- Written Qualifying Exam Workshop, (grad.) *Courant Institute, NYU* Fall 2000, Fall 2001
- Stochastic Processes, *Georgia Institute of Technology* Spring 2006
- Applied Calculus I, *Fairfield University* Fall 2006
- Teaching Assistant for*
- Precalculus, *Courant Institute, New York University* Fall 1998
- Business Calculus, *Courant Institute, New York University* Spring 1999

Other Work and Teaching Experience

- Graduate Assistant**, New York University. 1998-2003
- Instructor**, Marymount College, Tarrytown, NY. Summer, 1999
- Vice Principal of Academic Affairs**, Saramen Chuuk Academy, Micronesia. 1996-1997
Coordinated school-wide effort to help teachers create curriculum guides for high school course sequences. Evaluated teacher performance through classroom visitations and individual conferences. Organized after-school program for at-risk students. Wrote successful grant proposal to expand language lab for freshman English Skills.
- Teacher**, Saramen Chuuk Academy, Chuuk State, Micronesia. 1994-1997
Taught mathematics and English literature and composition to high school juniors and seniors. Developed curriculum guide and background materials for Senior Literature.
- Regional Geometry Institute**, Smith College, Northampton, MA. Summer 1993
Summer REU program dedicated to planar tilings and knot theory.
Group paper: *Efficient Tilings of the Hyperbolic Plane*.

Memberships and Service

- Journal Referee:** Nonlinearity, Discrete and Continuous Dynamical Systems
- Member:** Sigma Xi Scientific Research Society
American Mathematical Society
Mathematical Association of America

References

- Dr. Lai-Sang Young, *Courant Institute, New York University*, lsy@cims.nyu.edu.
- Dr. Leonid Bunimovich, *Georgia Institute of Technology*, bunimovh@math.gatech.edu.
- Dr. Carlangelo Liverani, *University of Rome, Tor Vergata, Italy*, liverani@math.uniroma2.it