

Tom LaGatta

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Education

University of Arizona Ph.D., Mathematics Advisor: Jan Wehr	Expected May 2010
University of Texas B.S., Mathematics	May 2004

Research Interests

I am most interested in mathematical questions which lie at the intersection of geometry and probability, particularly with applications to physics. My model of interest is so-called Riemannian first-passage percolation, where the usual passage times on a lattice are replaced by a random Riemannian metric on the plane. My thesis problem is to study the existence of globally length-minimizing geodesics. I am also interested in stochastic analysis on manifolds, discrete probability models, Gaussian random fields, Schramm-Loewner evolution and other topics related to probability.

Selected Talks

<i>“Statistical Mechanics from a Probabilist’s Point of View”</i> Graduate Mathematical Physics Seminar, University of Arizona	Fall 2008
<i>“Random Walk in Random Environment”</i> Mathematical Physics Seminar, University of Arizona	Fall 2008
<i>“Geodesics in a Random Riemannian Environment”</i> PIMS/UBC Summer School in Probability, University of British Columbia	Summer 2008
<i>“Conformal Invariance of Brownian Motion”</i> Graduate Probability Seminar, University of Arizona	Fall 2007
<i>“Brownian Motion on a Manifold”</i> Mathematical Physics Seminar, University of Arizona	Fall 2007
<i>“Random Riemannian Metrics and Discrete Percolation Models”</i> Stochastic Analysis Seminar, University of Warwick, Séminaire Interne, Ecole Normale Supérieure de Lyon, 3 rd Probability Summer School, Cornell University	Spring 2007
<i>“Bridging the Communication Gap Between Mathematics and Physics”</i> Graduate Colloquium, University of Arizona	Fall 2006
<i>“Introduction to First-Passage Percolation”</i> Mathematical Physics Seminar, University of Arizona	Fall 2006
<i>“Phase Transitions and Continuous Symmetry Breaking”</i> Mathematical Physics Seminar, University of Arizona	Spring 2006

Related Work Experience

- Graduate Teaching Associate** Fall 2004
Department of Mathematics, University of Arizona to Spring 2008
Taught a variety of courses over seven semesters, including Linear Algebra, Calculus, Statistics and Math in Modern Society, as well as acted as a teaching assistant for various graduate- and undergraduate-level courses.
- Research Engineer / Scientist Assistant** Summer 2005
Applied Research Labs, University of Texas at Austin
Supervisor: Min-Fon Chang
Developed algorithms with MATLAB for tracking surface ships using sonar data.

Seminars and Conferences Attended

- PIMS/UBC Summer School in Probability** Summer 2008
- Oberwolfach Seminar on Conformal Invariance in Mathematical Physics** Fall 2007
- PCMI Summer School on Statistical Mechanics** Summer 2007
- 3rd Cornell Probability Summer School** Summer 2007
- Joint Mathematics Meetings** Spring 2006

Fellowships and Awards

- NSF VIGRE Graduate Research Fellowship** Spring 2007
Department of Mathematics, University of Arizona and Summer 2008
2007: Support to conduct research at the physics laboratory at ENS-Lyon
2008: Support to attend PIMS/UBC Summer School in Probability.
- NSF US Junior Oberwolfach Fellow** Fall 2007
Mathematisches Forschungsinstitut Oberwolfach, Germany
Travel support to visit Oberwolfach, Germany, for a seminar on conformal invariance in mathematical physics
- Outstanding Teaching Assistant Award** Fall 2006
Department of Mathematics, University of Arizona
- NSF VIGRE Undergraduate Research Grant** Spring 2004
University of Texas at Austin
Advisor: John Luecke
Topic: Zeta functions and random graphs, cont.
- NSF VIGRE Research Experience for Undergraduates** Summer 2003
Louisiana State University
Advisor: Robert Perlis
Topic: Zeta functions and random graphs.

Service, Outreach, and Vertical Integration

- Mathematics Representative**, Graduate Council of Science Fall 2006 to present
Fostered communication between science graduate students and the Dean of the College of Science. Served as President of the Council for academic year 2007-2008. Organized a MATLAB short course and an awards ceremony for graduate students in the College of Science.
- College of Science Representative**, Graduate and Professional Student Council Fall 2006
Helped create graduate student bill of rights; helped organize student showcase, an event to highlight undergraduate and graduate student research; fought against tuition increases and for better student health insurance.
- Founder**, Interscience Graduate Colloquium Fall 2006
Created and organized biweekly colloquium series, to foster interdisciplinary communication and collaboration.
- Instructor Participant**, Teaching Teams Program Fall 2006
Utilized undergraduate preceptor to run weekly problem sessions.
- Graduate Mentor**, MATH 483 - Mathematical Modeling Spring 2006, Spring 2008
2006 – Led an undergraduate team to create a model for collective behaviors of living organisms.
2008 – Led an undergraduate team to model different traffic flow strategies, both deterministic and random.
- Organizer**, Mathematics Graduate Colloquium Fall 2005 to Spring 2006
Organized weekly colloquium series, for mathematics graduate students to discuss problems of interest.
- High School Outreach** Spring 2005 to Fall 2006
Helped coordinate workshops for high school students on cryptography and self-avoiding random walks.

Languages, Spoken and Programming

French; LaTeX, C++, MATLAB, Mathematica.