

Jacob A Gagnon

Term address
179 Summer Street
5 Mill Hollow Apartments
Amherst, MA 01002

Cell: 413-687-9426
Email: jgagnon@math.umass.edu

Education

PhD Mathematics (expected Sept. 2009), UMASS, Amherst, MA
M. S. Mathematics, UMASS, Amherst, MA, 2006
B. S. Mathematics, MIT, Cambridge, MA, 2003
B. S. Physics, MIT, Cambridge, MA, 2003

Graduate Courses include

Computational Molecular Biology 1 & 2, Systems Biology, Computational Functional Genomics, Foundations of Computational and Systems Biology, Numerical Methods 1 & 2

Research Interests

Biostatistics, Bioinformatics, Probability, Numerical Analysis, Computational Molecular Biology, Systems Biology, and Microarray Analysis

Publications

Q.E. Hoq, J. Gagnon, P.G. Kevrekidis, B.A. Malomed, D.J. Frantzeskakis, and R. Carretero-Gonzalez, "Extended Nonlinear Waves in Multidimensional Dynamical Lattices", *Math. Comput. Simulat.*, submitted, 2007.
P.G. Kevrekidis, J. Gagnon, D. J. Frantzeskakis, B.A. Malomed, "X, Y, and Z waves: Extended structures in nonlinear lattices", *Physical Review E*, Volume 75, page 016607 (2007).

Talks and Posters

Jacob Gagnon, "Support Vector Machines", Presentation, UMASS Mathematics Club, 2007
Jacob Gagnon, "Introduction to POV-ray", Presentation, UMASS Mathematics Club, 2007
Jacob Gagnon and Prof. Kevrekidis, "Stability of Solutions to the Discrete Nonlinear Schrodinger Equation in Multiple Dimensions", Presentation, Mathematical Association of America meeting, University of New Hampshire, Durham, NH, Nov 18-19, 2005
Jacob Gagnon, "Ranking the Invisible Web", Presentation, Mathematical Association of America meeting, Bates College, Maine, June 17-18, 2005.
Jacob Gagnon, "Reflection" and "Depicting Reflection using POV-ray", Artwork and

- Presentation, Boulders, Colorado, "Art + Math = X" conference, June 2-5, 2005.
- M.A. Dayananda, L.R. Ram-Mohan, J. Moussa, and Jacob Gagnon, "A computational program for interdiffusion fluxes, interdiffusion coefficients and diffusion paths for single phase multicomponent diffusion couples", Presentation, 132nd Annual Meeting of the Metallurgical Society, San Diego, CA, March 2003
- Ronak Bhatt, Bruno Coppi, Ivailo Dimov, Jacob Gagnon, "Characteristic Singularities of Marginally Stable Modes in Accretion Discs", Poster Session, 42nd Annual Meeting of the APS Division of Plasma Physics on Oct 23, 2000

Research Experience

- Apr 2007-Sept 2009: Research Assistant, UMASS Mathematics
Under the direction of Professor Liu, I researched biostatistics, microarray analysis, bioinformatics, and machine learning.
- Sept 2006-Mar 2007: Research Assistant, UMASS Mathematics
Under the direction of Prof. Ellis, Prof. Turkington, and Prof. Machta (Physics), I researched numerical methods applied to Statistical Mechanics.
- Feb 2006-July 2006, Summer 2005: Research Assistant, UMASS Math Department
Under the direction of Prof. Kevrekidis, I researched numerical methods applied to the Discrete Nonlinear Schrodinger equation in multiple dimensions.
- Sept 2003-May 2004: Computational Biology Research Assistant at MIT
Under the direction of Prof. Samson (Biological Engineering), I analyzed DNA microarrays to find the genetic response to DNA damaging agents.
- Summer 2003: Biology Research Assistant at MIT
Under the direction of Prof. Burge (Biology), I worked on the development of Human and Fungal Gene Finders.
- June 2002 - May 2003: Undergraduate Computational Physics Thesis Research
Under the direction of Prof. Hagelstein (EECS, MIT) and Prof. Ram-Mohan (EECS, WPI), I worked on the modeling of Quantum Cascade Terahertz Emitters.
- Dec 2001 - Jan 2002: Quantum Semiconductor Algorithms, Northborough, MA, Consultant
Under the direction of Prof. Ram-Mohan (EECS, WPI), I worked on mathematical programming and optimization.
- Summer 2001: Undergraduate Research Opportunities Program at MIT
Under the direction of Prof. Cory (Nuclear Engineering), I researched Quantum Computing and Information Processing.
- Jan 2000, Summer 2000, Jan 2001: Undergraduate Research Opportunities Program at MIT
Under the direction of Prof. Coppi (Physics), I solved equations from high energy plasma physics using analytic and numerical means.
- Sept 1998 - Sept 1999: Quantum Semiconductor Algorithms, Northborough MA, Consultant
Under the direction of Prof. Ram-Mohan (EECS, WPI), I performed finite element analysis and programming.

Internships

Summer 2002: Department of Defense Intern, Wright Patterson Air Force Base, Dayton, OH
Under the direction of Prof. Ram-Mohan (EECS, WPI), I worked on the theory, computer simulation, and optimization of Terahertz Emitters.

Summer 1998: California Institute of Technology, Summer Internship
Under the direction of Prof. Tombrello (Physics), I wrote computer programs for fiber optics and thin films calculations.

Teaching

Instructor Positions

Calculus 2, UMASS Continuing Education, Summer 2007

Statistics 111, UMASS Continuing Education, Wintersession 2006 and 2008

Qualification Exam Review Instructor

Numerical Analysis: Aug 2007, Aug 2008

Applied Mathematics: Aug 2008

Probability: Aug 2005, Jan 2006, Aug 2006, Aug 2007

Teaching Assistant Positions

Statistics 240, UMASS Mathematics, Fall 2005 and Spring 2008

Calculus 1, UMASS Mathematics, Spring 2005

Calculus 2, UMASS Mathematics, Fall 2008

Volunteer Work

Fall 1997 - Spring 1998: Massachusetts Academy of Mathematics and Science

Under the direction of Josh Abrams, Massachusetts Academy Instructor, we developed two educational software titles in Windows to teach children math modeling concepts.

Computer Skills

C, C++, Visual C++, Java, HTML, Pascal, Quick Basic, Perl, Python, BioPython, POV-ray, Mathematica, Maple, Matlab, SAS, R, Bioconductor, LaTeX, Photoshop

References

Professor Samson: Director of MIT Biological Engineering: 617-258-7813

Professor Orlando: MIT Computer Science Professor: 617-253-5888

Professor Burge: MIT Biology Professor: 617-258-5997