

BLERTA SHTYLLA

Department of Mathematics
155 South 1400 East,
Room 233,
University of Utah
Salt Lake City, UT 84112-0090

Office: (801) 585 1646
Fax: (801) 581 4148
Email: shtyllab@math.utah.edu
Homepage: <http://www.math.utah.edu/~shtyllab>

EDUCATION

Ph.D. Mathematics, University of Utah, Salt Lake City UT, *expected* May 2011.

Thesis Topic: Mathematical modeling of chromosome molecular couplers and chromosome movement during mitosis.

Advisor: James P. Keener

M.S. Mathematics, University of Utah, Salt Lake City UT, May 2007.

B.S. Mathematics, Lafayette College, Easton PA, May 2005.

Honors: *Summa Cum Laude*.

Minor: Biotechnology/Bioengineering.

RESEARCH INTERESTS

Mathematical Cell Physiology

Applied Dynamical Systems

Stochastic Phenomena in Biological Systems

PUBLICATIONS

B. Shtylla and J. P. Keener. A mathematical model for force generation at the kinetochore-microtubule interface, *submitted* (2010).

B. Shtylla and J. P. Keener. A mechanomolecular model for the movement of chromosomes during mitosis driven by a minimal kinetochore bicyclic cascade, *Journal of Theoretical Biology*, 2010, 263(4): 455-70.

B. Shtylla, L. Traldi, and L. Zulli. On the realization of double occurrence words, *Discrete Mathematics*, 2009, 309(6): 1769-1773.

B. Shtylla and L. Zulli. An extension of the Jones polynomial of classical knots, *Journal of Knot Theory and Its Ramifications*, 2006, 15: 81-100.

RESEARCH EXPERIENCE

Research Assistant

James Keener

Mathematical modeling of chromosome oscillations in mitosis.

Fall 2007-

Mathematics Department, University of Utah

Senior Honor Thesis

Rob Root and Ethan Berkove

Newton's method with stochastic perturbations of the first derivative.

Fall 2004–Spring 2005

Mathematics Department, Lafayette College

Summer Research Fellow

Mayo Summer Undergraduate Fellowship Program

Automatic motion correction algorithms in MRI.

Summer 2004

Department of Physiology and Biomedical Engineering, Mayo Graduate School

Summer Research
EXCEL Scholars Program
An extension of the Jones polynomial of classical knots.

Summer 2003
Mathematics Department, Lafayette College

TEACHING EXPERIENCE

Graduate Teaching Fellow (Course Instructor with full course responsibility), *Mathematics Department, University of Utah.*

- Math 2270: *Linear Algebra*, Summer 2008.
- Math 1030: *Intro to Quantitative Reasoning*, Summer 2007.
- Math 1220: *Calculus II*, Summer 2006.
- Math 1210: *Calculus I*, Fall 2005, Spring 2006.

Calculus Laboratory Teaching Assistant, *Mathematics Department, Lafayette College*, 2002–2005.

Calculus Cavalry Tutor, *Mathematics Department, Lafayette College*, 2002–2005.

CONFERENCE TALKS/ POSTER PRESENTATIONS

“A Mathematical Model for Force Generation Mechanisms at the Kinetochore-Microtubule Interface” (*Poster Presentation*), *2010 MBI Workshop for Young Researchers in Mathematical Biology*, Ohio State University, August 2010.

“A Mechanomolecular Model for Chromosome Movement during Mitosis” (*Poster Presentation*), *Biophysical Society 54th Annual Meeting*, San Francisco, CA, February 2010.

“Mathematical Models of One-Shot Molecular Engines”, *GSAC Graduate Colloquium*, Mathematics Department, University of Utah, December 2009.

“Knots, Ortho-Projection Matrices and Jones Polynomials”, *Nebraska Conference for Undergraduate Women in Mathematics*, University of Nebraska, February 2004.

“Knots, Ortho-Projection Matrices and Jones Polynomials”, *Summer Undergraduate Research Conference in Mathematics*, Ohio State University, August 2003.

WORKSHOPS/CONFERENCE ATTENDED

Department of Mathematics Annual TA Training Workshop (*co-organizer and workshop facilitator*), *Mathematics Department, University of Utah*, August 2010.

SIAM Conference on Applications of Dynamical Systems, *Snowbird, UT*, May 2009.

Mathematical Perspective on Cancer Immunology, *Mathematics Department, University of Utah*, May 2008.

Teaching Workshop Series: Developing Effective Assignments and Grading Rubrics in Higher Education, *The Center for Teaching and Learning Excellence, University of Utah*, November 2007.

IGERT 3rd Annual Student Workshop: Modeling and Simulation in the Life Sciences with Charlie S. Peskin, *Mathematics Department, University of Utah*, July 2007.

IGERT 2nd Annual Student Workshop: Biological Polymers and Cell Motility with Leah Edelstein-Keshet, *Mathematics Department, University of Utah*, May 2006.

Program for Women in Mathematics: Analysis and Nonlinear PDEs, *Institute for Advanced Study/Princeton University*, Summer 2004.

SELECTED SCHOLARSHIPS

University of Utah Graduate Research Fellowship, University of Utah Graduate School, Fall 2009–Spring 2010.

AMS Waldemar J. Trjitzinsky Memorial Award, Fall 2004.

Summer Undergraduate Research Fellowship, Mayo Graduate School, Summer 2004.

HONORS AND AWARDS

Phi Beta Kappa member, 2004.

Pi Mu Epsilon member, 2004.

Eugene P. Chase Phi Beta Kappa Award, Lafayette College, 2003.

Dean's List, Lafayette College, 2001-2005.

LEADERSHIP ACTIVITIES

Chair, *Graduate Student Advisory Retention, Promotion, and Tenure Committee*, Mathematics Department, University of Utah, Fall 2007–Spring 2010.

Social Chair, *Pi Mu Epsilon*, Lafayette College, 2004–2005.

Student Government Representative, *Faculty Enrollment Planning Committee*, Lafayette College, Fall 2004–Spring 2005.

Treasurer, *International Students Association*, Lafayette College, 2003.

Resident Advisor, *Office of Residence Life*, Lafayette College, 2002–2005.

COMMUNITY SERVICE ACTIVITIES

Exam Proctor, Helped administer exams to high school students participating in the *2008 Utah State Math Contest*, March 2008.

Translator, Provided Albanian language localization for the *Online Encyclopedia of Integer Sequences*, <http://www.research.att.com/~njas/sequences/indexalbanian.html>, Summer 2003.

Volunteer, *The Angels Cradle Program for Abandoned Babies*, University Hospital of Obstetrics and Gynecology no.1 (Organization for the Support of Albanias' Abandoned Children), Tirane, Albania, December 2002–January 2003.

Volunteer, *Easton Hospital Emergency Care Unit*, Easton PA, Summer 2002.

SKILLS

Computer: Matlab, Maple, Mathematica, XPPAUT, C

Fluent in written and spoken English, Albanian, Italian.

REFERENCES

James P. Keener
Distinguished Professor of Mathematics
Adjunct Professor of Bioengineering
University of Utah
(801) 581-6089
keener@math.utah.edu

Paul Bressloff
Professor of Mathematics
University of Utah
(801) 581-6851
bressloff@math.utah.edu

Aaron Fogelson
Professor of Mathematics
Adjunct Professor of Bioengineering
University of Utah
(801) 581-8150
fogelson@math.utah.edu

Henryk Hecht (teaching)
Associate Department Chair
Professor of Mathematics
University of Utah
(801) 581-6567
hecht@math.utah.edu