

ERIC PETERSON

1200 E CALIFORNIA BLVD • MC 103-33 • PASADENA, CA 91125
office 626.395.5876 • cell 626.755.3466 • eric@caltech.edu

EDUCATION

- California Institute of Technology** Pasadena, CA expected June 2008
Ph.D. Physics
- Brigham Young University** Provo, UT May 2003
B.S. Physics awarded magna cum laude with University Honors; GPA 3.97/4.0 overall, 4.0/4.0 major

WORK EXPERIENCE

- California Institute of Technology** Spring 2004–present
Teaching and Research Assistant (adviser: Rob Phillips)
- Developed MATLAB image analysis code to measure the mechanical forces applied to biomembranes
 - Developed Perl and MATLAB code to extract key statistics from billions of lines of text generated by a information retrieval project in protein sequence analysis
 - Developed a C++ Markov chain Monte Carlo code to study the statistical properties of membrane proteins
 - Developed problems and solutions for homework and exams to illustrate key ideas from courses in freshman biology (2007) and graduate courses in physical biology (2005 and 2006)
 - Taught weekly recitations and conducted office hours to explain difficult technical concepts
- Lawrence Livermore National Laboratory** Summer 2004
Graduate Research Assistant
- Analyzed the performance of an in-house atmospheric dispersion simulation with the results of a field study
 - Identified areas where the simulation gave accurate predictions as well as areas for future improvement
 - Presented the results of the simulation in a poster session at the conclusion of the summer work experience
- Los Alamos National Laboratory** Summer 1996-Fall 1997; Summers 2000, 2001, 2003
Research Assistant
- Modernized and documented a Fortran program which simulates electromagnetic pulses (2003)
 - Developed models in Mathematica to verify the results of the Fortran simulation (2003)
 - Conducted verification and validation of a C++ hydrodynamics code with benchmark problems (2001)
 - Developed Perl scripts to implement an XML web interface with basic search capability (2000)
 - Developed visualization tools in IDL and developed a custom data output library in Fortran90 (1997)
- BYU Physics Department** Spring 2001, Winter 2002–Winter 2003
Research Assistant
- Completed a senior thesis in plasma physics: developed an analytical 1d theory with research adviser, implemented a C++ computer simulation to confirm the theoretical results (2003)
 - Extended an existing C++ codebase for calculating the optical properties of multi-layer x-ray mirrors: added tools to find local and global maxima, basic graphing capabilities, UI refinements, and online help (2001)

SKILLS/QUALIFICATIONS

- DOE Q clearance (2003–2005), allows access up to Top Secret
- Familiar with Perl, C/C++ and Fortran as well as with Mac OS X, Linux and Windows systems
- Extensive experience with computational tools such as MATLAB, Mathematica, Maple and IDL
- Competent German speaker

ACHIEVEMENTS

- Recipient of a three year graduate fellowship from the Department of Homeland Security
- Awarded a four-year full tuition BYU Heritage Scholarship with National Merit distinction
- Member of Golden Key National Honor Society, Sigma Pi Sigma, Phi Kappa Phi
- Semi-finalist for the Presidential Scholar award, 1997
- Earned the Eagle Scout rank with the Boy Scouts of America

VOLUNTEER ACTIVITIES AND INTERESTS

- Provided training and leadership as an assistant to the bishop of a Latter-day Saint congregation in areas including outreach and social activities, organizing weekly services, website maintenance, and record keeping (Fall 2007–present)
- Served in a leadership capacity to plan and coordinate regular activities for single adults across multiple Latter-day Saint congregations (Summers 2000, 2001, 2002; Fall 2005–Fall 2007)
- BYU Society of Physics Students: Vice President 2001-2002, President 2002-2003
- Served 1998-2000 as a full-time missionary for the Church of Jesus Christ of Latter-day Saints in Germany
- Enjoy snowboarding, Dance Dance Revolution, cycling, ballroom dancing, strategy games

PUBLICATIONS

■ Journal Articles

E. L. Peterson, J. Kondev, J. A. Theriot, R. Phillips. *Reduced amino acid alphabets improve the sensitivity and selectivity of pairwise sequence alignment searches*. Manuscript in preparation.

E. L. Peterson, H. J. Lee, R. Phillips, W. S. Klug, P. A. Wiggins. *Measuring the forces on biomembranes based on membrane structure*. Manuscript in preparation.

T. Ursell, K. C. Huang, E. Peterson, R. Phillips. *Cooperative gating and spatial organization of membrane proteins through elastic interactions*. PLoS Comput Biol. 4 May 2007; 3(5):e81.

■ Conference Talks

E. Peterson (August 2006). *Forces and Geometry in 3-D Membrane Mechanics*. Talk presented at Joint SIAM-SMB Conference on the Life Sciences, Raleigh, NC.

E. Peterson, R. Phillips, P. Wiggins, F. Feng and W. Klug (March 2005). *Membrane Geometry and Forces*. Talk presented at the March annual meeting of the American Physical Society, Los Angeles, CA.

■ Conference Posters

E. L. Peterson, H. J. Lee, P. Wiggins, R. Phillips (February 2008). *Measuring Forces from Membrane Geometry*. Poster presented at the annual meeting of the Biophysical Society, Long Beach, CA.

E. L. Peterson, H. J. Lee, R. Phillips, P. A. Wiggins, W. S. Klug (December 2006). *Membrane Geometry and Forces*. Poster presented at the annual meeting of the American Society for Cell Biology, San Diego, CA.

E. Peterson, P. Wiggins, H. J. Lee, W. Klug and R. Phillips (February 2006). *Measuring Forces from Membrane Geometry*. Poster presented at the annual meeting of the Biophysical Society, Salt Lake City, UT.

E. Peterson and R. Spencer (November 2002). *Isolating the Effects of the Moving Ends of a Collisionless Non-neutral Plasma, or “Landau Damping of a Manhole Cover”*. Poster presented at the annual meeting of the Division of Plasma Physics of the American Physical Society, Orlando, FL.

■ Reports

E. Peterson, J. Aubrey, D. Marshall, “Studies of the Sedov blast wave and Noh problems using the MIMIC and TOTO hydrodynamics codes”, LA-UR-01-4953, Los Alamos National Laboratory (2001).