ANNA LIEB

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EDUCATION

University of California, Berkeley 2011-2016 (expected)
Department of Mathematics
Ph.D. Candidate, Applied Mathematics (Advisor: Jon Wilkening)
Thesis topic: *Modeling and optimization of transients in water distribution networks with intermittent supply*

University of Cambridge 2010-2011
Department of Applied Mathematics and Theoretical Physics
Master of Advanced Study (Part III of the Mathematical Tripos), *Pass with Distinction*

University of Colorado, Boulder 2006-2010
B.S. Applied Mathematics and Engineering Physics, *Summa Cum Laude*
GPA 3.996

FELLOWSHIPS AND AWARDS

AAAS Mass Media Fellow 2015
Competitive award (15 PhD students selected annually) to spend 10 weeks as a science writer for established news organization.

National Science Foundation Graduate Research Fellow 2010

Churchill Scholarship 2010
Nationally competitive award (14 US students selected annually) for study in math or science at the University of Cambridge.

Outstanding Graduate, CU Boulder College of Engineering and Applied Science 2010
Recognized for outstanding scholarship and service in a graduating class of 615 students.

COMAP Mathematical Contest in Modeling Outstanding Designation and INFORMS Award 2009
Worked in a team of three. Outstanding designation reserved for top nine of over 1600 international teams.

PUBLICATIONS AND PRESENTATIONS

- "The role of uncertainty in intermittent water supply" (Poster), American Geophysical Union Fall Meeting, December 2015.
- "How does network design constrain optimal operation of intermittent water supply?" (Contributed Talk), American Physical Society Division of Fluid Dynamics Meeting, November 2015.
- "Optimizing intermittent water supply in urban pipe distribution networks" *SIAM Journal of Applied Mathematics.* (in review) Preprint: http://arxiv.org/pdf/1509.03024v1.pdf.
- "Modeling and Optimization for Management of Intermittent Water Supply" (Poster), American Geophysical Union Fall Meeting, December 2014.
- "Optimal Dynamics of Intermittent Water Supply" (Contributed Talk), American Physical Society Division of Fluid Dynamics Meeting, November 2014.
- "Optimizing Intermittent Water Supply" (Contributed Talk) Copper Mountain Iterative Methods Conference, April 2014.
- Lieb, A., Darrouzet-Nardi, A., and Bowman, W.D. "Nitrogen deposition decreases acid buffering capacity of alpine soils." *Geoderma*. V. 164, I. 3-4, 2011.
- Reed, M., Lieb, A, and Nijhout, H. "The Biological Significance of Substrate Inhibition." *Bioessays*. V. 32, I. 5, May 2010.
- Damle, A., Lieb, A, and Peterson, C.G. "Psuedo-finite Jackson networks and simulation: a roundabout approach to traffic control." *UMAP Journal*. Vol. 30, Issue 3, Fall 2009.

RESEARCH EXPERIENCE

Graduate Research Assistant, UC Berkeley 2012-present
Use modeling and optimization to understand and improve intermittent supply in urban water distribution (in collaboration with UC Berkeley Civil Engineering). Author of C++/Python code (https://github.com/liebannam/pipes) simulating transient flow in water distribution networks. Also very familiar with POVRay and Matlab for data analysis and visualization.

Intern, NextDrop LLC (Hubli, India) Summer 2012
Worked with startup to collect calibration data and build hydraulic models of intermittent water supply in urban India.

Undergraduate Research Affiliate, CU Boulder Computational Math Group 2009-2010
Created hybrid Monte Carlo simulations of 2D QED to generate test data for novel numerical methods in lattice QCD.

HHMI Research Program, Duke University, Department of Mathematics Summer 2009
Used mathematical models to understand how evolutionary selection pressure affects substrate-inhibited pathways regulating biochemical activity.

Field Research Assistant, Institute for Alpine and Arctic Research, Colorado 2008-2009
Quantified nitrogen cycling in alpine soils. Designed/implemented study of how nitrogen deposition affects alpine soil buffering.

MCTP Undergraduate Research Program CU Boulder Department of Applied Mathematics 2007-2008
Fit parameters to patient data with ODE-based models of HIV/immune system dynamics.

COMMUNICATION AND LEADERSHIP

AAAS Mass Media Fellow, *NOVA Next* June 2015- August 2015

Wrote content for website of prominent nonprofit educational organization. Authored feature articles and news stories. Analyzed data to produce graphics and interactive visualizations. (See http://www.pbs.org/wgbh/nova/next/author/anna-lieb/).

Editor in Chief, *The Berkeley Science Review* November 2014-November 2015

Oversaw magazine content and ensured organizational sustainability and growth. Assigned workflow and resolved conflicts for staff of 20 volunteer editors and writers. Successfully navigated difficult funding environment, allowing for continued release of both mobile and print editions. (See http://berkeleysciencereview.com/read/).

Writer and Editor, *The Berkeley Science Review* 2012-present

As writer, present cutting-edge Berkeley research for an audience of interested non-specialists. As editor, evaluate 3-5 pieces per semester for content and style, lead writing workshops, and fundraise.

Co-founder and President, Society for Industrial and Applied Mathematics Student Chapter 2012-2014

Secure funding and organize events to foster mentorship and community in Applied Mathematics at UC Berkeley. Annually recruit and mentor 6-15 undergraduates participating in the Mathematical Contest in Modeling (MCM).

Graduate Student Instructor, UC Berkeley Mathematics 2011-2014

Created supplementary materials and provided individualized learning assistance and evaluation for 25-50 students per semester in Calculus and Numerical Analysis. Helped develop lecture materials for a new "Math for Biologists" course.

Presenter, Oakland NerdNite 2013

Delivered public lecture on metrology and physics to general audience of about 100 adults.

PROFESSIONAL

Society for Industrial and Applied Mathematics Member and co-founder of UC Berkeley Student Chapter
American Physical Society Member
American Geophysical Union Member
National Association of Science Writers Student Member
American Association for the Advancement of Science Member

ADDITIONAL

Long distance running (including 3 Boston Marathons), cooking, hiking, travelling, cycling, snowshoeing, backcountry skiing.