

# Rachel Levy

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**Social Media** twitter: @mathcirque  
blog: ggstem.wordpress.com

**Education** North Carolina State University  
Ph.D. in Applied Mathematics (2003-2005)  
Thesis: Partial differential equations of thin liquid films: analysis and numerical simulation  
Advisor: Michael Shearer  
M.S. in Applied Mathematics (2001-2003)  
  
University of North Carolina Chapel Hill  
M.A. in Instructional Design (1994-1996)  
  
Oberlin College  
B.A. in Mathematics and Honors in English (1985-1989)

**Research Interests** Traveling wave and shock solutions of parabolic-hyperbolic systems  
Applications of mathematics to biological and industrial problems  
Experimental fluid mechanics  
Numerical solutions of differential equations  
Innovative design of instruction  
Mathematical modeling in K-16 curriculum

## Academic Positions

**Harvey Mudd College** Associate Dean for Faculty Development (2015-18)  
Associate Professor (2012 – present)  
Iris and Howard Critchell Assistant Professor (2011-12)  
Avery Professor (2011-12)  
Assistant Professor (2007-11)

**Duke University** Postdoctoral Research Associate (2005-07)

**North Carolina State University** Graduate Research Assistant (2001-05)

## Honors and Awards

**Fulbright Specialist Roster**, 2015-present.

**Henry L. Alder Award** for distinguished teaching by a beginning college or university mathematics faculty member, Mathematical Association of America, August 2013.

**Iris and Howard Critchell Chair**, Harvey Mudd College, 2011-2012.

**Boeing Distinguished Visiting Lecturer**, Spring 2011.

**Avery Professor**, Claremont Graduate University, Spring 2011.

**Project NExT Fellow**, American Institute of Mathematics, 2007.

**Distinguished Visiting Professor**, Bucknell University Mathematics, April 2007.

**Poster Prize**, "Effect of Localized Forcing on Driven Thin Liquid Films," MSRI, May 2006.

**SIAM Student Paper Prize**, "Kinetics and Nucleation for Driven Thin Film Flow," 2005.

**Best Student Talk**, British Applied Mathematics Colloquium, April 2004.

**Fellowship Recipient**, Microsoft Future Professors Pilot, 2003-2004.

## Publications

**Book** Partial Differential Equations: Introduction to Theory and Applications, M. Shearer and R. Levy, Princeton University Press, 2015. MAA Review by Mark Hunacek on 03/31/2015: <http://www.maa.org/press/maa-reviews/partial-differential-equations-an-introduction-to-theory-and-applications>

### Applied Mathematics Articles (\* indicates undergraduate co-author)

1. Strait, Melissa, Michael Shearer, Rachel Levy, Luis Cueto-Felgueroso, and Ruben Juanes. "Two Fluid Flow in a Capillary Tube." In *Collaborative Mathematics and Statistics Research*, pp. 149-161. Springer International Publishing, 2015.
2. Levy, Rachel, David B. Hill, M. Gregory Forest, and James B. Grotberg. "Pulmonary Fluid Flow Challenges for Experimental and Mathematical Modeling." *Integrative and comparative biology* 54, no. 6 (2014): 985-1000. doi:10.1093/icb/icu107
3. Strickland, Stephen L., Matthew Hin, M. Richard Sayanagi, Cameron Gaebler, Karen E. Daniels, and Rachel Levy. "Self-healing dynamics of surfactant coatings on thin viscous films." *Physics of Fluids (1994-present)* 26, no. 4 (2014): 042109. <http://dx.doi.org/10.1063/1.4872020>,
4. Levy, Rachel, and David Uminsky. "Formation of Ocean Surface Patterns by Cetacean Fluke Oscillations." In *Natural Locomotion in Fluids and on Surfaces*, pp. 159-166. Springer New York, 2012.
5. Levy, Rachel, David Uminsky, Allison Park, and John Calambokidis. "A theory for the hydrodynamic origin of whale flukeprints." *International Journal of Non-Linear Mechanics* 46,

no. 4 (2011): 616-626. DOI:10.1016/j.ijnonlinmec.2010.12.009

6. Levy, Rachel, Stephen Rosenthal, and Jeffrey Wong. "Engineering flow states with localized forcing in a thin Marangoni-driven inclined film." *Physical Review E* 82, no. 5 (2010): 056320.
7. Grunewald, Natalie, Rachel Levy, Matthew Mata, Thomas Ward, and Andrea L. Bertozzi. "Self-similarity in particle-laden flows at constant volume." *Journal of Engineering Mathematics* 66, no. 1-3 (2010): 53-63.
8. Peterson, E, Shearer, M, Witelski, TP, Levy, R. Stability of traveling waves in thin liquid films driven by gravity and surfactant. In: Tadmor E, Liu JG, Tzavaras A, editors. *Hyperbolic Problems: Theory, Numerics and Applications. Proceedings of Symposia in Applied Mathematics*. Vol. 67. Pt. 2. Providence: American Mathematical Society, 2009.
9. Levy, Rachel, Michael Shearer, and Thomas P. Witelski. "Gravity-driven thin liquid films with insoluble surfactant: smooth traveling waves." *European Journal of Applied Mathematics* 18, no. 06 (2007): 679-708.
10. Witelski, Thomas P., Michael Shearer, and Rachel Levy. "Growing surfactant waves in thin liquid films driven by gravity." *Applied Mathematics Research Express* 2006 (2006): 15487.
11. Levy, Rachel, and Michael Shearer. "The motion of a thin liquid film driven by surfactant and gravity." *SIAM Journal on Applied Mathematics* 66, no. 5 (2006): 1588-1609.
12. Levy, Rachel, and Michael Shearer. "Kinetics and nucleation for driven thin film flow." *Physica D: Nonlinear Phenomena* 209, no. 1 (2005): 145-163.
13. Levy, Rachel, and Michael Shearer. "Comparison of two dynamic contact line models for driven thin liquid films." *European Journal of Applied Mathematics* 15, no. 06 (2004): 625-642.

## **Mathematics Education Articles and Proceedings**

1. Probing the Flipped Classroom: Results of A Controlled Study of Teaching and Learning Outcomes in Undergraduate Engineering and Mathematics, 2016 *ASEE Annual Conference & Exposition*, Accepted, November 2015.
2. Teague, Dan, Fowler, Kathleen and Levy, Rachel "The GAIMME Report: Mathematical Modeling in the K-16 Curriculum" *Annual Perspectives in Mathematics Education (APME) 2016: Mathematical Modeling and Modeling Mathematics*, National Council of Teachers of Mathematics, Accepted, October 2015.
3. Turner, Peter, Levy, Rachel and Fowler, Kathleen, Collaboration in the Mathematical Sciences Community on Modeling Across the Curriculum, for *Chance Magazine*, Accepted, May 2015.
4. Yong, Darryl, Rachel Levy and Nancy Lape, "Why No Difference? A Controlled Flipped Classroom Study for an Introductory Differential Equations Course," *PRIMUS*, Vol. 25, No.9-10, p.919-933, October 2015, DOI: 10.1080/10511970.2015.1031307.

5. Lape, Nancy K., Rachel Levy, Darryl H. Yong, Karl A. Haushalter, Rebecca Eddy, Nancy Hankel, Probing the Inverted Classroom: A Controlled Study of Teaching and Learning Outcomes in Undergraduate Engineering and Mathematics, 2014 ASEE Annual Conference, Paper ID #9475 <http://www.asee.org/public/conferences/32/papers/9475/view>
6. Levy, Rachel. "Soap and Slope: Mathematical Adventures in Fluid Dynamics." *Mathematics Teacher* 107, no. 5 (2014): 378-384  
<http://www.jstor.org/stable/10.5951/mathteacher.107.5.0378>
7. Levy, Rachel, Michael Shearer, and Padraic Taylor. "Automated review of prerequisite material for intermediate-level undergraduate mathematics." *PRIMUS* Vol. 17, no. 2 (2007): 167-180.
8. Ipsen, Ilse, Daniel E. Finkel, Christopher Kuster, Matthew Lasater, Rachel Levy, Jill P. Reese, and Ilse CF Ipsen. "Communicating applied mathematics: Four examples." *SIAM Review* 48, no. 2 (2006): 359-389.

## Open source software and documentation

Claridge, Jonathan, Rachel Levy and Jeffrey Wong\*, Solving Nonlinear High Order PDE Systems: Methodology and a Clawpack library, (open access paper and code on GitHub 2013).  
[https://github.com/claridge/implicit\\_solvers](https://github.com/claridge/implicit_solvers)

## Other published work (not peer reviewed)

1. Encyclopedia entries on Euphemia Haynes Lofton and The Association for Women in Mathematics, in ABC-CLIO, to appear 2016.
2. Levy, Rachel, Edmond Chow, Byong Kwon, Katherine Socha, Maeve McCarthy, and Peter Turner, "SIAM Education Subcommittee Report on Undergraduate Degree Programs in Applied Mathematics," submitted to SIAM Review, February 2015.
3. Internships Connect Math Students to New Career Paths. American Scientist Macroscopic Blogs. <http://www.americanscientist.org/blog/pub/internships-connect-math-students-to-new-career-paths> July 7, 2015.
4. 5 Reasons to Teach Mathematical Modeling. American Scientist Macroscopic Blogs. <http://www.americanscientist.org/blog/pub/5-reasons-to-teach-mathematical-modeling> May 5, 2015
5. Levy, Rachel, "Industrial Mathematics Inspires Mathematical Modeling Tasks with High Cognitive Demand," Dennis, Mark R., et al. *The Princeton Companion to Applied Mathematics*. Ed. Nicholas J. Higham. Princeton University Press, 2015.
6. Should Your Research Be on YouTube? *SIAM News*  
<http://sinews.siam.org/DetailsPage/tabid/607/ArticleID/501/Should-Your-Research-Be-on-YouTube.aspx> June 1, 2015

7. Levy Rachel, The Moody's Mega Math Challenge Marks 10th Year, *SIAM News*, <http://sinews.siam.org/DetailsPage/tabid/607/ArticleID/505/The-Moody%E2%80%99s-Mega-Math-Challenge-Marks-10th-Year.aspx> June 1, 2015,
8. Levy, Rachel, Maki, Kara and Fowler, Katie, How Can the SIAM Community Help Embed Math Modeling in K–16 Curricula? April 1, 2015, *SIAM News*.<http://sinews.siam.org/DetailsPage/tabid/607/ArticleID/451/How-Can-the-SIAM-Community-Help-Embed-Math-Modeling-in-K-16-Curricula.aspx>
9. Lape, Nancy K., Rachel Levy, and Darryl Yong, "Can Flipped Classrooms Help Students Learn? We're Trying to Find Out," *Future Tense*, April 25 2014 10:33 AM. [http://www.slate.com/articles/technology/future\\_tense/2014/04/flipped\\_classrooms\\_can\\_the\\_y\\_help\\_students\\_learn.html](http://www.slate.com/articles/technology/future_tense/2014/04/flipped_classrooms_can_the_y_help_students_learn.html)
10. Levy, Rachel, "Every Math Major Should Take a Public Speaking Course," *Math Horizons*, Wednesday, April 2, 2014.
11. Bourouiba, Lydia, David L. Hu, and Rachel Levy. "Surface-Tension Phenomena in Organismal Biology: An Introduction to the Symposium." *Integrative and comparative biology* (2014): icu113.
12. Levy, Rachel, Postdoc Mentorship Can Launch Careers", *American Scientist*, Vol. 102, No. 6, November-December 2014, DOI: [10.1511/2014.111.418](https://doi.org/10.1511/2014.111.418).
13. Levy, Rachel, Flora Lichtman and David Hu, "The Scientist-Reporter Collaboration", *SIAM News*, April 1, 2014.
14. Levy, Rachel and Peter Turner, "SIAM Education Committee Releases Timely Report on Undergraduate Programs", *SIAM News*, June 1, 2014.
15. Levy, Rachel, "Quantitative Approaches to Sustainability Seminars." *Notices of the AMS* 60, no. 4 (2013).
16. Levy, Rachel and Peter Turner, "SIURO: A Flourishing Home for Undergraduate Research," *SIAM News*, October 7, 2013.
17. Williams, Talithia and Rachel Levy, "Hitting the Target: Connecting Parents to STEM", *MAA Focus*, Dec 2013-Jan 2014.
18. Levy, Rachel. "Grandma Got STEM turns 100 posts old!." *Journal of Humanistic Mathematics* 3, no. 2 (2013): 149-152. DOI: 10.5642/jhummath.201302.15 Available at: <http://scholarship.claremont.edu/jhm/vol3/iss2/15>
19. Keeter, Matthew, Daniel Moore, Ryan Muller, Eric Nieters, Jennifer Flenner, Susan E. Martonosi, Andrea L. Bertozzi, Allon G. Percus, and Rachel Levy. "Cooperative search with autonomous vehicles in a 3d aquatic testbed." In *American Control Conference (ACC)*, 2012, pp. 3154-3160. IEEE, 2012.

## Professional Reports

1. GAIMME Report: Guidelines for Assessment and Instruction in Mathematical Modeling Education, lead author of early grades section, CoMAP and SIAM.
2. Lead writer, Report from the NSF-IPAM Workshop on Mathematical Sciences Internships, October 2015. <http://www.ipam.ucla.edu/wp-content/uploads/2015/10/NSF-IPAM-industry-internship-workshop-report.pdf>
3. Early grades lead, Modeling Across the Curriculum II, Society for Industrial and Applied Mathematics, in revision, 2015.
4. Lead writer, Undergraduate Applied Mathematics Programs, Society for Industrial and Applied Mathematics, 2014, [http://www.siam.org/reports/undergraduate\\_14.pdf](http://www.siam.org/reports/undergraduate_14.pdf).

## Writing Contributions (not primary author)

5. Contributor, Response to PCAST Report, Society for Industrial and Applied Mathematics, 2012. <http://www.siam.org/reports/pcast.php>
6. Contributor best practices for teaching differential equations to Bob Devaney for the MAA's Committee on the Undergraduate Program in Mathematics (CUPM) publication, Spring 2012.
7. Behringer, Robert, Daniels, Karen, Levy, Rachel, Matar, Omar, Shearer, Michael, Witelski, Thomas, Final report from BIRS Workshop Thin Liquid Films and Fluid Interfaces: Models, Experiments and Applications (12w5035). <http://www.birs.ca/workshops/2012/12w5035/report12w5035.pdf>
8. Contributor, Modeling Across the Curriculum, Society for Industrial and Applied Mathematics, 2012. [www.siam.org/reports/modeling\\_12.pdf](http://www.siam.org/reports/modeling_12.pdf)

## Student Publications Mentored

1. Stephanie Porter, Dong-Hyeon Park and Sarah Warkentin, Sensitivity to Noise in Particle Filters for 2-D Tracking Algorithms, SIURO, Volume 6 (2013). <http://dx.doi.org/10.1137/12S012136>
2. Celeste Conti, Eric Autry, and Greg Kronmiller, The Effects of Spatial and Temporal Grids on Simulations of Thin Films with Surfactant, SIURO, Volume 6 (2013). <http://dx.doi.org/10.1137/12S011878>
3. Hendrik Orem (HMC Mathematics 2009), Basins of Attraction and Perturbed Numerical Solutions using Euler's Method, SIURO, Volume 1, Issue 2, 2008. <http://dx.doi.org/10.1137/08S010116>
4. Caroline Yang (Duke Mathematics 2006), Modeling Blood Flow in Arteries, Vertices, Summer 2006.

## Webinar Delivery

1. October 15, 2015 Webinar Modeling 101 for Discovery Learning with Patrick Vennabush and Andrew Stadel. <https://blog.discoveryeducation.com/blog/2015/10/14/getting-started-with-mathematical-modeling/>
2. April 15, 2015 Webinar with Jennifer Pearl (NSF) for University Industry Demonstration Partnership "Math Students with Skills You Want and Where to Find Them" [www.conf.purdue.edu/16241rec](http://www.conf.purdue.edu/16241rec)
3. April 15, 2015 Webinar with Nancy Lape for Learning Spaces Collaboratory "Classrooms for Flipped or Blended Learning" <http://pkallsc.org/events/lsc-webinar-classrooms-flipped-or-blended-learning>  
<https://learningspaces.webex.com/learningspaces/lsc.php?RCID=afe8305937e8895b58f21e07802abc8c>

## Video Appearances

Moody's Mega Math Challenge Award Ceremony Speech

Featured in SIAM public awareness video

[https://www.youtube.com/watch?feature=player\\_embedded&v=fez3LwcpMt8](https://www.youtube.com/watch?feature=player_embedded&v=fez3LwcpMt8)

Featured minisymposium talk from SIAM CS&E Conference 2015

[www.pathlms.com/siam/courses/1043/sections/1280/thumbnail\\_video\\_presentations/9971](http://www.pathlms.com/siam/courses/1043/sections/1280/thumbnail_video_presentations/9971)

Featured in video clips that are part of an academic integrity tutorial made by Honnold Library

<http://libraries.claremont.edu/achontutorial/pages/index.html>

## Funded External Grants

**National Science Foundation**, "Program IMMERSION: Investigating Mathematical Modeling, Experiential Learning and Research through a Sustainable Infrastructure and an Online Network for teachers in the elementary grades," STEM-C, Padmanabhan Seshaiyer (PI), Elizabeth Burroughs (co-PI), Rachel Levy (co-PI), Jennifer Suh (co-PI), Spencer Jamieson (co-PI); September 1, 2014 through August 31, 2017, Award Number:1441024, Total award \$1,299,959, HMC Award \$352,393.

**National Science Foundation**, "Probing the Inverted Classroom: A Controlled Study of Teaching and Learning Outcomes in Undergraduate Chemistry, Engineering, and Mathematics," (Transforming Undergraduate Education, TUES- Award Number:1244786) Nancy K. Lape (PI), Rachel Levy (co-PI), Darryl H. Yong (co-PI), Karl Haushalter (co-PI), \$199,544.

**National Science Foundation**, "Optimizing the Mathematics Postdoctoral Experience: A Teaching and Research Postdoctoral Fellowship at Harvey Mudd College," Andrew Bernoff (PI), Rachel Levy (co-PI), Jon Jacobsen (co-PI). Award number 083996, July 1, 2009- June 30,

2015, \$800,000.

**National Science Foundation** “Symposium & Workshop: Shaking, dripping and drinking: surface-tension phenomena in organismal biology”, SICB Annual Meeting, Austin, Texas, January 3-7, 2014. (NSF-1347346), David Hu (PI), Rachel Levy, Lydia Bourouiba, Award Date 11/01/2013; Award Amount: \$15,913.

**Office of Naval Research**, Principal Investigator, “Mathematics of Communication and Control for Dynamic Mobile Aquatic Sensors”, Grant 10513283 with Allon Percus (CGU); Developing remotely operated underwater vehicles and algorithms for coordination and control, 2010-2012, \$150,000 + \$10,000 expansion grant (2011).

**National Science Foundation**, Principal Investigator, “FRG-Collaborative Research: The Dynamics of Thin Liquid Films: Mathematics and Experiments” with Karen E. Daniels (NCSU), Michael Shearer (NCSU) and Thomas P. Witelski (Duke), June 1, 2010- May 31, 2015, Award number 0968154, Total funding \$780,951, HMC funding \$142,156.

**Research Corporation**, Principal Investigator, “A Mathematical and Experimental Investigation of Surfactant Spreading on Thin Liquid Films,” Single Investigator Cottrell College Science Award, 2010-2012, \$48,322.

## Funded Internal Grants

2015 Creativity and Innovation Initiative Grant (with K. Fandell) \$2000

Beckman Incentive Award (NSF-STEMC) \$1000

Mellon Presidential Leadership Award, Fluidity course (with K. Fandell) \$700

Summer Institute Research Student Sponsorship Award (I. Evans) \$1000

2014 Sherman Fairchild Student Research Award (C. Bonilla) \$6250

Sherman Fairchild Student Research Award (J. Liu) \$6250

HHMI Faculty Research Award \$1325

HHMI Student Research Award (D. Sinclair) \$5000

HHMI Research Award (N. Leslie) \$5000

HHMI 5C-SURP Collaborative Research Award (with B. Sanii), \$13,000

Beckman Incentive Award (NSF-TUES) \$1000

2013-14 5C Professional Development Group Award (with B. Sanii) \$1750

2013 HHMI Student Research Award (S. Kumar)

HHMI Student Research Award (S. Batchu)

Summer Institute Research Students Sponsorship Award (C. Bonilla) \$1000

Summer Institute Research Students Sponsorship Award (J. Perdomo) \$1000

Summer Institute Research Students Sponsorship Award (J. Liu) \$1000

2012 CIS Technology Innovation Grant – Computing Modules

- CIS Technology Innovation Grant – Flipped Classroom  
 HHMI Student Research Award (D. Park)
- 2011 Beckman Incentive Award (NSF-FRG) \$1000  
 Baker Student Research Award (E. Lei)  
 Baker Student Research Award (G. Dinolov)
- 2010 Rose Hills Student Research Award (J. Wong) \$6000  
 Rose Hills Faculty Research Award \$2000  
 Mellon Core Curriculum Reform Award \$3000  
 Baker Student Research Award (G. Dinolov) \$6000  
 Baker Faculty Research Award \$1000  
 Center for Environmental Studies Awards (A. Musselman, A. Levy) \$6500
- 2009 Baker Student Research Award \$5000  
 Baker Faculty Research Award \$1000  
 Center for Environmental Studies Awards (D. Skjorshammer) \$2000
- 2008 Engman Faculty Research Award \$4816  
 Beckman Student Research Award (S. Rosenthal) \$5184  
 Beckman New Faculty Award \$3000

## Teaching

### Harvey Mudd College

MATH 15: Calculus	F13
WRIT 001: First Year Writing	Who Needs Feminism (F13), Identity and Society in Graphic Novels (F10, Su11, Su12) Identity and Technology (F11), Science Communication in Popular Media (F12), Feminism: Who Needs It? (F13)
MATH 30: Single and Multivariable Calculus	F11
MATH 45: Ordinary Differential Equations	S08, F08, S09, S10, S11, S12, S13, S14
MATH 118: Intro. to Math. and Comp. Biology	S14
MATH 165: Numerical Analysis	F11, F12
MATH 180: Partial Differential Equations	F07, F08
MATH 181: Dynamical Systems	S08, S09
MATH 189: Fluid Mech. And Locomotion	F10
MATH 198: Math Forum (Public Speaking)	F08, S09, S12, F12, S13, F13
CLINIC: Industrial Math Capstone	08-09, 09-10, 10-11, 11-12, 12-13

### Duke University

MATH 102/202: Multivariable Calculus	Fall 2006
MATH 228: Mathematical Fluid Dynamics	Fall 2005

## **Carolina Friends School**

Upper School: Geometry, Algebra II, Precalculus, Calculus, Statistics 1997-2001  
Middle School: Mathematics and English, Upper School: English 1991-1995

## **Duke University Talent Identification Program**

Intensive Algebra 1, Algebra 2, Precalculus, and Number Theory Summers 1989-1991

## **Research Projects with Undergraduates**

Mathematical Modeling for the Early Grades

Summer 2015: Zoe Tucker, Kira Wyld, Evan Atchison, Isaiah Evans, Emily Lane

Experiments and models for lipid spreading on thin fluid films

Summer 2013 – Summer 2014: Joanna Perdomo, Sagar Batchu, Caitlyn Bonilla, Jeanette Liu, Shreyas Kumar, Peter Megson, Dina Sinclair, Nathaniel Leslie

Numerical and experimental methods for thin films problems

Summer 2012 - Fall 2013: Cameron Conti, Matt Hin, Richard Sayanagi

Algorithms and experiments for control of aquatic robots

Summer 2012: Stephanie Porter, Dong-Hyeon Park

Numerical methods for thin films problems

Summer 2011: Eric Autry, Cameron Conti, Gregory Kronmiller, Jeffrey Wong

Algorithms and experiments for control of aquatic robots

2010-2011: Georgi Dinolov, Max Gonzalez, Paige Pruitt, Alex McAuley, Will Ferenc, Daniel Moore, Ryan Muller, Eric Nieters, Matthew Keeter, Jennifer Flenner (CGU Graduate Student)

Early algebraic thinking in elementary school students

2010 HMC Mathematics thesis: Ivan Hernandez

Optimization of renewable energy installments in California

2010: Amelia Musselman, Andrea Levy

Experimental and numerical study of whale flukeprints

2008-2010: Hendrik Orem, Dmitri Skjorshammer, Mark Nurik, Oliver Ortlieb, Allison Park, Jennifer Lee

Numerical simulations of localized forcing of thin liquid films

2007-2010: Stephen Rosenthal, Jeffrey Wong

Particle-laden flows: theory and experiment

2008-2009: Vedika Khemani, Stephen Rosenthal, Patrick Foley

## **Editorial Work**

Editorial Board of Math Horizons, F2013 – present.

Editor-in-Chief of SIAM Undergraduate Research Online (SIURO), 2012 - 2014.

Associate Editor of SIAM Undergraduate Research Online (SIURO), 2011- 2012.

## **Conference, Workshop and Symposium Organization**

NSF-IPAM Workshop on Industrial Internships in the Mathematical Sciences, UCLA, September, 2015.

SIAM Conference on Computational Scientific and Engineering, March 2015, Salt Lake City: Mini-symposium on Industrial Mathematics Education, Graduate Student research paper sessions, Introduction to Student Days, Breakfast with SIAM Leadership; Communication Doctor's Booth.

Joint Mathematics Meetings, January 10-13, 2015, San Antonio, Modeling Across the Curriculum II Minisymposium and discussion, organized with Peter Turner (Clarkson).

NSF-SIAM-ASA Conference on Modeling Across the Curriculum II, January, 2014, American Statistical Association, January 2014, organized with Peter Turner (Clarkson), Katherine Socha (MFA), Jeff Humphreys (BYU).

Society for Integrative and Comparative Biology Annual Meeting, Jan 4, 2014, Austin TX, Workshop on How to Communicate your Research to News Outlets with Flora Lichtman and David Hu; Symposium on Shaking, dripping and drinking: Surface-tension phenomena in organismal biology, organized with David Hu (Georgia Tech) and Lydia Borouiba (MIT),

Banff International Research Station, Thin Liquid Films and Fluid Interfaces: Models, Experiments and Applications, Dec 9-14, 2012, organized with M. Shearer (NC State), K. Daniels (NC State), T. Witelski (Duke), R. Behringer (Duke), O. Matar (Imperial)  
<http://www.birs.ca/events/2012/5-day-workshops/12w5035>

Bobfest Conference in honor of Bob Borrelli, Claremont Colleges, 2012.

Fields Institute, Workshop on Surfactant Driven Thin Film Flows, Feb 22-24, 2012, Toronto, organized with M. Chugunova (Toronto) and L. Smolka (Bucknell).  
<http://www.fields.utoronto.ca/programs/scientific/11-12/thinfilmlows/>

SIAM Annual Meeting, Undergraduate Research Poster Session, July 2008, 2009, 2010 organized with A. Bernoff (HMC) and C. Topaz (Macalester).

Conference on the Mathematics of Environmental Sustainability and Green Technology, Jan 29-30, 2010, Harvey Mudd College.  
<http://www.math.hmc.edu/conferences/2010/>

SIAM Annual Meeting, Mini-symposium on the Dynamics of Thin Liquid Films, Project NExT Panel on Undergraduate Research, co-organizer, Joint Mathematics Meetings 2008.

SIAM Southeast Atlantic Section (SEAS) Meeting, Thin Films Mini-symposium, 2005. organized with M. Shearer (NC State).

## Selected Invited Presentations

### 2015

1. Transforming Post Secondary Education (TPSE) in Mathematics, Chicago Regional Meeting, Sept 18-20, 2015.  
Panel: Enhanced Opportunities for Highly Motivated Undergraduates. Organizer: mark Green, UCLA, Panelists, *Joseph Gallian*, University of Minnesota – Duluth, *Rachel Levy*, Harvey Mudd College, *Christine Taylor*, Princeton University.
2. Joint Mathematics Meetings, San Antonio, January 2015.
  - Panel: Recommendations for the 21st Century Mathematical Sciences Major, Organizers: Martha J. Siegel, Towson University, and Carol Schumacher, Kenyon College, Panelists: Rachel Levy, Harvey Mudd College; Nicholas J. Horton, Amherst College; and Elizabeth A. Burroughs, Montana State University.
  - Panel: Active Learning Strategies for Mathematics, Abstract: AMS recognizes the importance of active learning strategies and is working with organizations such as Transforming Post-Secondary Education in Mathematics (TPSE Math) to clarify what this means for our community and to promote best practices in teaching the mathematical sciences. This panel will highlight some of the active learning strategies for which we have evidence of effectiveness.
  - Minisymposium. Modeling Across The Curriculum: The Early Grades.
  - SIAM Report to TPSE Mathematics Meeting.
3. Digital Humanities at the Claremont Colleges, Tools, “Grandma got STEM,” Feb 20, 2015.
4. SIAM Computational Science and Engineering Meeting, Salt Lake City, March 2015.
  - Minisymposium, Modeling Across the Curriculum, Early Grades
  - Minisymposium, Modern Computational Modeling in Fluids (part of the Workshop Celebrating Diversity).
  - Communication Doctor
5. Panelist: "Careers and Opportunities in Industry for Mathematical Scientists" Institute for Mathematics and its Applications (IMA) Monday, April 20 – Wednesday, April 22, 2015
6. Speaker, Moody’s Mega Math Challenge Awards Ceremony, April, 2015.
7. Facilitator, Common Vision Meeting, May 1-3, 2015.
8. Public Lecture, Grandma got STEM, Korean International Women’s Mathematics Conference, July 3, 2015.
9. Invited Lecture, Mathematical Modeling and Industrial Mathematics Education, Korean International Women’s Mathematics Conference, July 4, 2015.
10. Mathematical Modeling Workshop for in-service teachers in Graduate School at Seoul National University, July 5, 2015.
11. Workshop on Professional Presentations, Ulsan National Institute of Science and Technology (UNIST), Innovation Immersion Network, July 7, 2015.

### 2014

1. Society for Integrative and Comparative Biology, January 2014
  - Press communication workshop with Flora Lichtman
  - Surfactant talk in fluids symposium.

2. Modeling Across the Curriculum II, January 2014
  - Panel discussion
  - Early grades workshops and final presentation
3. Joint Mathematics Meeting, Baltimore, January 2014
  - Mathematical Modeling in the Early Grades
  - Probing the inverted classroom: a multi-year multi-department study
4. Mudd on a Mission Campaign, Panelist, April 5, 2014
5. MAA Section Meeting, Concordia University, Irvine, April 12, 2014
  - Keynote: A Mathematician Meets the Media
6. Sacred Sistah's Conference for African American Girls, Parent workshop  
Harvey Mudd College, April 26, 2014
7. AWM Undergraduate Conference, University of California at San Diego, May 3, 2014
  - Keynote: Surfactant-driven Thin Liquid Films: Theory and Experiment
8. Okinawa Institute of Science and Technology (OIST), June 9-14, 2014
  - Dynamics at Interfaces Workshop
  - The Spreading of Surfactants on Thin Liquid Films
9. SIAM Annual Meeting, Chicago, July 2014
  - Mathematical Modeling in the Early Grades  
[https://client.blueskybroadcast.com/SIAM14/AN/SIAM\\_AN14\\_MS121\\_2/](https://client.blueskybroadcast.com/SIAM14/AN/SIAM_AN14_MS121_2/)
  - Workshop: How to Collaborate with the Press, with Flora Lichtman
10. SIAM Life Sciences, Charlotte, August 2014
  - Cellular, Tissue and Organ Level Biofluid Dynamics Minisymposium  
Surface Tension in Human Lungs, Modeling and Experiments
  - Lee Segal Panel on Careers in Mathematical Biology, Organized by: Bob Guy,  
Panelists: Timothy David, Oliver Jensen, Tim Elston, Rachel Levy, Jeff Sachs and  
Suzanne Lenhart
11. Wofford College Mathematics Colloquium, September 2014
  - The Mathematics of Thin Liquid Films: Theory and Experiment
12. NC State Undergraduate Research Advisory Committee October 1, 2014
  - Discussed HMC clinic program and viability for industrial connections in the NC State  
college of Physical and Mathematical Sciences.
13. Conference Board of the Mathematical Sciences, October 5-7, 2014
  - Forum on the First Two Years of College Math
14. Rochester Institute of Technology, November 11, 2014
  - Colloquium on Surfactants and Thin Liquid Films
  - Women in Science lunch speaker
  - Press workshop
15. American Physical Society Division of Fluid Dynamics, November 21, 2014
  - Workshop: So you want to tell your research story? With David Hu, Nicole Sharp,  
Jason Bardi, Flora Lichtman,
  - Minisymposium talk, "Impact of the Equation of State in Models for Surfactant  
Spreading Experiments"
16. Seoul National University, Korea, November 28, 2014
  - Workshop, Active Learning and Flipped Classrooms, Seoul National University,
17. Ulsan Institute of Science and Technology (UNIST), Korea, December 4, 2014
  - Soft Matter Physics Colloquium Speaker
18. Korea Conference for Educational Technology, November 29, 2014
  - Active and Flipped Learning Strategies
19. Institute of Science and Technology (DGIST), Daegu, Korea, December 2, 2014

Consulting visit, Industrial STEM education

20. Gwangju Institute of Science and Technology (GIST), Korea, December 8, 2014
  - Workshop, Mathematics education
  - Interdisciplinary meeting on undergraduate education

## 2013

1. Science Online, *Why Share Code?*, Raleigh, NC, January 2013
2. Teaching Contemporary Mathematics Workshop, "Industry-inspired mathematics problems," NCSSM, Durham, NC, January 2013.
3. Society for Integrative and Comparative Biology, "Surface tension in human lungs: modeling and experiments" Austin, TX, Jan 2013.
4. A Bite of Learning, "Experimenting with the Flipped Classroom Model at HMC," by Karl Haushalter (Chemistry), Nancy Lape (Engineering), Rachel Levy (Math), Darryl Yong (Math), Jacqueline Dresch (Math), April 2013.
5. Project Next Panelist, "The Inverted Classroom" with Darryl Yong, July 31, 2013.
6. Issac Newton Institute, informal research talk, "Surfactants and thin film models," Cambridge, England, August, 2013.
7. Cal Poly Pomona Colloquium, "Surfactant-driven Thin Liquid Films: Theory and Experiments (better breathing through mathematics?)," Pomona, CA, December 4, 2013.

## 2012

1. Claremont Discourse Lecture, Comic Books, Graphic Novels and Manga for Fun, Respect and (if you must) Higher Education, Honnold Library, Claremont, March 2012.
2. Sacred Sistahs SESHAT Conference for African-American Girls, Harvey Mudd College, April 14, 2012.
3. Claremont Long Beach Mathematics Collaborative, Study Skills Workshops, with Talithia Williams, HMC, Spring 2012.
4. SIAM Annual Meeting, "*Why Share Code?*" July, 2012
5. American Physical Society, Division of Fluid Dynamics, Hole-Closing of a Surfactant Layer on a Thin Fluid Film, November 18-20, 2012.

## 2011

1. Project NEXt Panel, "Interdisciplinary research" Joint Mathematics Meetings, San Francisco, January, 2011.
2. Office of Institutional Diversity Panel after the play "Truth Values," February 2011.
3. Workshop presenter for 1<sup>st</sup> Annual Sacred Sistahs Conference on Math and Science for African American Girls, "Envisioning a World of New Possibilities," March 2011.
4. Claremont Discourse, Algorithms for coordination and control of aquatic robots, April 2011.
5. Boeing Distinguished Researcher and Scholar Seminar, Algorithms for coordination and control of aquatic robots, May 2011.
6. Keynote Address at Clarkson University for the St. Lawrence Valley Undergraduate Mathematics Conference, November 2011.

## 2010

1. Project NEXt Panel, Joint Mathematics Meetings, January 2010.
2. Teaching Contemporary Mathematics Workshops, NCSSM, January 2010.
3. Presentation for Math Zoom Summer Students, Coordination of Robotic Vehicles, August,

2010.

4. USA Science and Engineering Festival SIAM Booth, Hands-on activities with surface tension, Washington, DC, October 2010.
5. University of Southern California, Women in Mathematics Symposium, Algorithms for coordination and control of aquatic robots, November 2010.
6. Saddle Rock presentations on Math and Writing Core, November 2010
7. GEMS outreach event for 80 students, Pitzer College, Soap and Slope, December 2010.

## 2009

1. Teaching Contemporary Mathematics Workshop, "Industry-inspired mathematics problems," NCSSM, January 2009.
2. Institute for Mathematics and its Applications, IMA Hot Topics Workshop: Higher Order Geometric Evolution Equations, March 2009.
3. Workshop presenter, Society for Women Engineers, WEST Conference, March 2009

## 2008

1. Cal Poly Pomona, Particle Laden Flow, April 2008.
2. Frontiers in Applied and Computational Mathematics, NJIT, Surfactant and gravity-driven thin film flow, May 2008.
3. Enhancing Diversity in Graduate Education (EDGE) program invited lecture, Pomona College, A shocking discovery: Non-classical waves in thin liquid films, June 2008.

## 2007

1. Bucknell University, "Gravity-driven thin film flow with insoluble surfactant: smooth traveling waves", April 2007.
2. Bucknell University, Student seminar, "Soap and Slope", April 2007.
3. UCLA, Applied Mathematics Seminar, "Gravity-Driven Thin Film Flow with Insoluble Surfactant: Smooth Traveling Waves," May 16, 2007.

## 2005-06

1. SIAM Annual Meeting, New Orleans, July 13 2005, The Effect of Surfactant On the Motion of a Liquid Film Down an Inclined Plane
2. University of Nottingham, "Surfactant and gravity-driven thin film flow", April 2006.
3. Joint Mathematics Meetings, San Antonio, Texas, AWM Workshop for Women Graduate Students and Recent PhDs, "Surfactant and gravity-driven thin film flow", January 2006.

## Representative Talk Abstracts

### Surface Tension in Human Lungs: Modeling and Experiments

Abstract: Naturally produced surfactant, which lowers surface tension is required for normal human lung function. Premature babies born before surfactant production begins, are at risk for respiratory distress, and often require surfactant replacement therapy. For 20 years mathematicians, engineers and physicists have sought to model the complicated flow of fluid lining the passageways and alveoli of the lungs. New experiments allow us to visualize a

simplified system that includes a thin film of glycerol and a surface layer of surfactant. This talk will describe what we can learn from such experiments, how the results compare to a commonly accepted model, and how we might modify the experiments and models to better capture dynamics in the lungs.

### **Mathematical Modeling in the Early Grades**

Abstract: What can mathematical modeling look like in the K-6 curriculum? Mathematical modeling motivates student engagement, transfer to new context, skill development related to real problems, communication and interdisciplinary work. The U.S. Common Core State Standards for Mathematics indicate that Modeling with Mathematics is an important mathematical practice, but does not specify the ways this practice can be implemented within the curriculum. This session will focus on characteristic of rich modeling problems, issues that are particular to the early grades and professional development for Elementary School teachers on mathematical modeling.

### **A Mathematician Meets the Media: Grandma got STEM**

Abstract: Grandma got STEM was a blog designed to counter the notion that that things are “so easy your Grandmother could do it” or that a good explanation is one even “your Grandmother could understand.” The blog, read worldwide, started a journey of unexpected and exciting press interactions and taught many lessons about the power of online communication.

### **Communicating with the Press**

Abstract: This workshop will help you disseminate your research to news outlets. You will learn how to develop productive collaborations with reporters, and see examples of ways reporters can help make your technical communication clearer. You will practice how to craft a message, how to avoid miscommunication, and how to develop a press kit.

## **Theses Advised**

Experiments on Surfactants and Thin Fluid Films  
2014 HMC Physics Thesis: Peter Megson

Simulations of Surfactant-Driven Thin Film Flow  
2014 HMC Mathematics Thesis: Shreyas Kumar

Russian Mathematical Pedagogy in Reasoning Mind  
2012 HMC Mathematics Thesis: Maia Valcarce

Early Algebraic Thinking  
2012 HMC IPS Thesis: Ivan Hernandez

Simulations of Surfactant Spreading on Glycerine  
2011 HMC Mathematics thesis: Jeffrey Wong

Abstractions of Control for Swarms  
2011 HMC Mathematics thesis: Georgi Dinolov

## **Mathematics Clinic Projects Advised**

2012-13 Optimizing Drilling Rate With Machine Learning Shell Oil

Alexandra Schofield (Project Manager), Kyle Chakos, Sam Grey, John Wentworth

2011-12 Livingston Cooperage Optimization Model, E&J Gallo Winery  
Keiko Hiranaka (Project Manager), Kevin Black, Leon Liu, Maksym Taran

2010-11 Application of Robust Control to Spacecraft Attitude, Space Systems Loral  
Jacob Bouricius (Project Manager), Maxwell Lee, Andrea Levy, Margaret Rogers

2009-10 Modeling Fluid Transport in Subcutaneous Tissue, Carefusion  
Ben Goldenberg (Project Manager), Chris Fathauer, Simon Just, Daniel Patterson

2008-09 Modeling Fluid Transport in Subcutaneous Tissue, Cardinal Health  
Steven Rosenthal (Fall Project Manager), Brian Stock (Spring Project Manager), Harry Dudley,  
Melissa Strait

## **Student Presentations**

1. American Physical Society Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014, Poster Presentation "Surfactant Spreading on Viscous Fluid Films," Caitlyn Bonilla, Jeanette Liu, Dina Sinclair, Nathaniel Leslie,
2. HMC Student Research Poster Session, September 2014 "Surfactant Spreading on Viscous Fluid Films," Caitlyn Bonilla, Jeanette Liu, Dina Sinclair, Nathaniel Leslie
3. Sacred Sistah's Conference for African American Girls, surfactant workshop run by undergraduate Dina Sinclair, Harvey Mudd College, April 26, 2014
4. Mathematical Biosciences Institute (MBI) Undergraduate Capstone Conference, August 2014, Poster Presentation, "Surfactant Spreading on Viscous Fluid Films," Jeanette Liu.
5. Soap and Slope Workshops, Sacred Sistahs Conference, HMC, April 2014, Dina Sinclair.
6. Panelist, Mudd on a Mission campaign, April 5, 2014, Joana Perdomo.
7. NSF Louis Stokes Alliance for Minority Participation Symposium, February 8, 2014, University of California at Irvine, Poster Presentation, "Surfactant Spreading on Viscous Fluid Films," Joana Perdomo.
8. American Physical Society Division of Fluid Dynamics Annual Meeting, San Diego, November 2012, Poster Presentation, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film", Matt Hin and Richard Sayanagi.
9. CCMS Student Research Poster Session, September 2012, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," Matt Hin and Richard Sayanagi.
10. HMC Student Research Poster Session, September 2012, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," Matt Hin and Richard Sayanagi.
11. HMC Student Research Poster Session, "September 2012, Sensitivity to Noise in Particle Filters for 2-D Tracking Algorithms" Dong-Hyeon Park and Stephanie Porter.
12. HMC Student Research Poster Session, September 2012, "Analysis of biofilms," Wendy Brooks and Shreyas Kumar.
13. NCSU Student Research Poster Session, August 2012, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," Matt Hin and Richard Sayanagi.
14. Regional MAA Meeting, April 2012, Poster presentation and Poster Prize, "Russian Mathematical Pedagogy in Reasoning Mind," Maia Valcarce.
15. Sacred Sistahs Conference, April 2012, Soap and Slope Workshop, Daisy Hernandez and Katarina Hoeger.
16. American Control Conference Talk, Cooperative Search with Autonomous Vehicles in a 3D

- Aquatic Testbed, Montreal Canada, June 28, 2012, Eric Nieters and Matt Keeter.
17. KAUST Undergraduate Mathematics Conference, January 2012, poster, "Simulations of surfactants on thin films," Cameron Conti, Eric Autry and Gregory Kronmiller.
  18. Joint Mathematics Meetings, January 2011, Talk, Cooperative Search with Autonomous Vehicles in a 3D Aquatic Testbed, Matthew Keeter, Dan Moore, Ryan Mueller, and Eric Nieters.
  19. Georgi Dinolov presented his thesis research at the Loyola Marymount Pacific Undergraduate Mathematics Conference, March 2011.
  20. Loyola Marymount Pacific Undergraduate Mathematics Conference, Jeffrey Wong, Surfactant Code, March 2011.
  21. SIAM Conference on Computational Science and Engineering, Space Systems/Loral Clinic Project, Jake Bouricius, March 2011.
  22. NCSU Thin Films Day, 2010, Surfactant simulations talk, Jeffrey Wong.
  23. Joint Mathematics Meeting, San Diego, Localized Forcing in Thin Liquid Films, Steven Rosenthal, January 2008.
  24. SIAM Annual Meeting, San Diego, Steven Rosenthal, July 2008.

## **National Service**

Vice President for Education, Society for Industrial and Applied Mathematics (SIAM) 2015-2017.

NCTM-SIAM Committee Member, 2015-17.

Worcester Polytechnical Institute Program Review, 2016-17.

Facilitator, Common Vision Meeting, April 2015.

Mathematical Association of America Science Policy Committee, 1/1/2016 - 1/31/2019.

Judge, Moody's Mega Math Competition, 2013-2015.

AWM Mentor, Joint Mathematics Meetings, San Antoni, January 2015.

Organizer, NSF-ASA-SIAM Conference on Modeling Across the Curriculum II, Jan 2014.

NSF Panelist for Division of Mathematical Sciences Proposals, Spring 2013.

Associate Editor of SIAM Undergraduate Research Online (SIURO), 2011-12.

NSF Panelist for Division of Mathematical Sciences Proposals, Spring 2012.

Thin Films Conference at the Banff International Research Station, December 2012.

Reviewed articles for American Mathematical Monthly and SIURO, 2011-2012.

Keynote Adress at Clarkson University for the St. Lawrence Valley Undergraduate Mathematics Conference, November 2011.

NSF Panelist for Division of Mathematical Sciences Proposals, Spring 2010.

Organizer of Poster session for Undergraduate Research, SIAM Annual Meeting, Denver, July 2009, 2010.

Organizer of Minisymposium: three sessions of research talks (12 talks) at SIAM annual meeting on thin liquid films, Denver, July 2009.

Member National Society for Industrial and Applied Mathematics (SIAM) Education Committee,

2009-2011.

Organizer, Thin Films Day at NCSU; meeting of faculty and students from mathematics, physics and engineering departments at Duke, NC State, UNC-Chapel Hill and HMC, January 2009.

Combined Board of the Mathematical Sciences (CBMS), meeting on K-12 Standards, 2009.

SIAM Education Committee Member, 2008-present.

## **Advisory/Review Boards**

Advisory Board, Instructional Practices Guide for MAA Curriculum for Undergraduate Programs in Mathematics (CUPM) Guide, 2105-16.

Advisory Board, BYU Applied Mathematics computational sciences program, 2014-present.

Advisory Board, Pennsylvania State System of Higher Education (PASSHE) Math Faculty Consortium, 2014 - present.

Advisory Board, MAA Instructional Practices Guide, 2015-present.

Advisory Board for the HMC Aero Scholars Program, 2011-present.

## **Service as Manuscript Referee**

SIAM Journal of Applied Mathematics (SIAP)

Journal of Fluid Mechanics (JFM)

Langmuir

Physica D: Nonlinear Phenomenon

Journal of Math. Analysis and Applications (JMAA)

Primus

Applied Mathematics Research Express (AMRX)

FONDECYT (Chile)

Integrative and Comparative Biology (ICB)

Physics of Fluids

Princeton Press

SIAM Journal on Mathematical Analysis (SIMA)

American Mathematical Monthly

SIAM Undergraduate Research Online (SIURO)

## **Harvey Mudd College Service**

Associate Dean for Faculty Development, 2015-2018.

Leadership Position pre-search committee advisory group, Fall 2015.

Associate Dean for Diversity Advisory Selection Committee, Fall 2015.

Managing Editor of HMC Interface Compendium of Student Work, 2011-present.

Chair of Computing Committee, 2013-2014.

Chair of Teaching and Learning Committee, 2010-2013.  
Teacher for Summer Institute WRIT 001, 2011, 2012.  
Organizer of TLC Core Connections Meeting with all faculty, 2012.  
Organizer of Le Cirque Claremont for Parents Weekend, February 2012.  
Ad-hoc Committee on HMC Pet Policy, 2011-2012.  
Presenter for Junior Faculty Luncheon, 2011-2012.  
Department organizer summer research recruitment, summer 2011.  
Co-coordinator of UCLA Summer Mathematics REU, 2008-2010.  
Organizer of HMC Idea Buffets, 2008-2010.  
Teaching and Learning Committee Member, 2008-2010.  
HMC Multicultural Allies Program, 2008-2009.  
Interviewer for HMC President's Scholars Program, 2008-2009.  
Sponsor for students on E4 Teams Projects to create "robofluke", 2008-2009.  
Sponsor for CS121 Team to improve MuddShots, 2008-2009.

## **Mathematics Departmental Service**

Preparation for departmental review, 2015-16.  
Art Competition Coordinator, 2015-16.  
Liaison to the Admissions office 2012-2014.  
Core curriculum committee 2013-14.  
Liaison and sponser for DYNAR clinic, 2011-2012.  
Postdoctoral Mentoring Program Director, 2009-2014.  
Associate Clinic Director, 2011-12.  
Summer research recruitment, summer 2009-11.  
Mathematics Department Computing Committee, 2011-2012.  
SIAM Student Chapter and Math Club advisor, Fall 2007-Spring 2012.  
Liaison to UCLA Summer REU, 2007-09.

## **Press Coverage**

**Science**, Quoted in Water's Tough Skin by Elizabeth Pennisi. Cover story based on symposium co-organized with David Hu and Lydia Bourouiba for the SICB. *Science 14 March 2014: Vol. 343 no. 6176 pp. 1194-1197, DOI: 10.1126/science.343.6176.1194*

**HMC News and Events**, New Study Focuses on Mathematical Modeling in the Elementary Grades, October 2, 2014, <https://www.hmc.edu/about-hmc/2014/10/02/new-study-focuses->

mathematical-modeling-elementary-grades/

**Forbes Blog**, Look What Happens When STEM Professors Teach Writing by Maria Klawe, April 30, 2014

<http://www.forbes.com/sites/mariaklawe/2014/04/30/why-stem-professors-can-teach-anything-even-writing/>

**NPR Tell Me More with Michel Martin**, How Parents are Leading the Revolution for Girls in Tech, March 18, 2014, [Interview of Mimi Kome, Iman Saint Jean and Rachel Levy](#)

**Bedtime Math**, Five thoughts Friday with Rachel Levy, October 4, 2013  
<http://bedtimemath.org/five-thoughts-friday-with-rachel-levy/>

## Flipped Classroom Research Press Coverage

URL: <https://sites.google.com/a/g.hmc.edu/inverted-classroom-study/>

- [Harvey Mudd Professors Experimenting with Flipped Classes](#)  
ASEE First Bell, Higher Education, November 18, 2014
- [Harvey Mudd among Colleges Experimenting with 'Flipped' Classes](#)  
By Jason Song, in the Los Angeles Times, November 16, 2014
- [HMC Flipped Classroom Study Shows No Difference](#)  
By Han Jia, in The Student Life, October 3, 2014
- [Flipped Classroom May Help Weaker STEM Students](#)  
By Allie Bidwell, U.S. News and World Report, August 5, 2014
- [Can Flipped Classrooms Help Students Learn?](#)  
[We're trying to find out.](#), By Nancy Lape, Rachel Levy, and Darryl Yong  
in Slate, Future Tense, April 25, 2014
- [Assessing the Flipped Classroom's Impact on Learning](#)  
By David Raths, Campus Technology, January 22, 2014
- [On the Flip Side \[or not\]](#), by Koren Wetmore, Harvey Mudd College Magazine  
Fall/Winter 2013
- [Still in Favor of the Flip](#), by Carl Straumsheim, Inside Higher Ed, October 30, 2013
- [Quickwire: Flipping Classrooms May Not Make Such Difference](#), by Hannah Winston,  
Chronicle of Higher Education, October 22, 2013
- ['Flipped Classrooms May Not Have Any Impact on Learning](#)  
by Emily Atteberry, USA Today, October 22, 2013
- [A response to USA Today article on Flipped Classroom research](#)  
by Darryl Yong, e-literate blog, Posted by Phil Hill on October 22, 2013
- [Professors Flip Classroom](#), By Thalia Rossitter, The Student Life, October 4, 2013

## Grandma got STEM Press Coverage

### Radio Interview

ABC North Queensland Australia, Morning Show with Paula Tapiolas  
[Interview of Rachel Levy by David Alex Chambers](#)

## Articles featuring Grandma got STEM

- slate.com [Amazing Grandma got STEM project fights old lady luddite stereotype](#) Jason Bittel
- boingboing.net [grandmothers-who-are-brilliant](#) Cory Doctorow
- The Atlantic [All-request photos on In Focus](#) with by Alan Taylor (see pic #18)
- Calcalist [Grandma has Wheels](#) by Keren Tsurriel
- Canadian Broadcast Company, George Strombolopolous, [Awesome Blog Celebrates Grandmas Who Work\(ed\) In Science, Tech, Engineering And Math](#)
- History of Science Society April 2013 Newsletter by Jacqueline Wernimont
- Scope (Stanford Science): [Chipping Away at Stereotypes about Older Women and Science, one story at a time](#) by Michelle Brandt
- The Hearth (Assisted Living and Aging in California): [Blog celebrates the Grandmothers of Science, Tech, Engineering and Math](#)
- Reddit: [Grandmas got STEM celebrates grandmas that work/worked in science](#)
- science careers [Grandma, What a Big Brain You Have!](#) Beryl Bender
- «GRANDMA GOT STEM»: LES GRANDS-MÈRES AUSSI PEUVENT ÊTRE FORTES EN SCIENCES Cécile Dehesdin
- jezebel.com [Grandma got STEM challenges the stereotype of Technologically Hapless Old People](#) Doug Barry
- Claremont DH Featured Projects: [Grandma got STEM](#) by Jacque Wernimont
- ThomasNet.com News [Grandma got STEM](#)

## Grandma got STEM featured on these blogs

- Mindful Teachers: [Celebrating the Ordinary Women of STEM \(e-interview\)](#) by Catherine Hannay.
- AMS Blogs: [Blog on Math Blogs Lovely article about Grandma got STEM](#) by Evelyn Lamb in honor of her Grandmother's Birthday.
- Codagogy Web Start Women [Grandma got STEM](#)
- PMA Women in Manufacturing: [Grandma got STEM and the Real Live Rosies](#)
- Lohdown on Science: [Kiss Your Grandma Today! \(Or do it over the phone!\)](#) by Sandra Tsing Loh
- CIRM (California Institute for Regenerative Medicine) Stem Cell Research Updates [Grannies in the lab: Blog showcases influential women in science](#) by Amy Adams
- Double X Science: [Stereotype Threat](#) by Chris Gunter
- Blogger.com Must read blogs: [Grandma got STEM](#) by Virginia deBolt
- Women in STEM Throwback: [Grandma got STEM](#) by Ali
- Femgeeks rrebooting... gender (German)
- Phantom List links to women's writing by women around the web.
- [Grandma's got STEM](#) Jaqueline Carville
- themakermom.com [Grandma Got STEM: STEM Girl Friday](#) Kim Moldofsky
- Bad Mom, Good Mom [Grandma got STEM](#)
- neatorama.com [Grandma got STEM](#) Miss Cellania
- feminist philosophers [Grandma got STEM](#)
- scientific femanomaly [Grandma got STEM](#)
- Frogheart [Your Grandma got STEM?](#)

- Nature Blogs [About your Grandmother in STEM](#) Laura Hoopes
- [STEM-Up PA](#)
- Drexel Math Forum InternetNews Sept 6, 2013

## Interface Compendium of Student Work

Permanent Library Repository

<http://scholarship.claremont.edu/interface/>

Front End Site

<https://interfacehmc.wordpress.com/>

Supervised student editors

Huting Lin	2014 – present
Stephanie Zellner	2012 – 2014
Carling Sugarman	2011 – 2012

## Research Students Mentored

Name	Grad Year	Major(s)	Project	Current Occupation
Caroline Yang	2006	Mathematics (Duke U)	Blood flow	Mathematics PhD Program
Stephen Rosenthal	2009	Physics	Particle-laden flow, surfactant spreading	Software Engineer, Seattle
Patrick Foley	2009	Mathematics	Particle-laden flow	PhD progrm, Statistics, Carnegie Mellon University
Vedika Khemani	2009	Physics	Particle-laden flow	PhD Program Physics, Princeton
Nadia M'Tarrah	Exch.	Engineering	Wave tank	France
Alex Young	2010		Wave tank	Battery Engineer Alta Motors
Alexandre Amert	Exch.	Engineering	Wave tank	France
Hendrick Orem	2009	Mathematics	Flukeprints	PhD Program, UT Austin
Oliver Ortleib	2012	Engineering	Flukeprints	Software Engineer, MakerBot
Will Ferenc	2013	Engineering	Submarines	Instrumentation Eng., SpaceX
Paige Pruitt	2011	Engineering	Submarines	Embedded Systems Engineer at KeyMe
Alex McAuley	2011	Engineering	Submarines	Engineer, Qualcomm
Maximillian Gonzalez	2012	Engineering	Robotics	Field Application Engineer II at Arrow Electronics
Georgi Dinolov	2010	Mathematics	Robotic coordination	PhD program, Applied Mathematics and Statistics
Jeffrey Wong	2011	Mathematics	Surfactant spreading	Fellowship, UCLA Mathematics PhD Program

Dmitri Skjorshammer	2011	Mathematics	Flukeprints	Programmer, San Francisco
Ivan Hernandez	2010	Mathematics Education (IPS)	Algebraic reasoning	Mathematics teacher, Oakland, CA
Maia Valcarce	2012	Mathematics	Russian Pedagogy	Mathematics teacher, Greenfield High School
Matthew Keeter	2011	Engineering	DYNAR	Electrical Engineer, Formlabs
Dan Moore	2011	Math/Comp Sci	DYNAR	Researcher, Baltimore MD
Ryan Mueller	2011	Math/Comp Sci	DYNAR	Software engineer at Sport Ngin
Eric Nieters	2011	Engineering	DYNAR	Product Development Engineer, Aclima, Inc
Sarah Warkentin	2012	Mathematics	Tracking algorithms	Trader, IMC Financial Markets
Dong-hyeon Park	2013	Engineering	Tracking algorithms	PhD Student, University of Michigan
Stephanie Porter	2013	Engineering	Tracking algorithms	Software Engineer at Factual, Inc.
Andrea Levy	2011	Mathematics	Energy	Research Analyst at Acumen LLC
Amy Musselman	2011	Mathematics	Energy	PhD Program in OR, Gerogia Tech
Wendy Brooks	2015		Biofilms	HMC
Richard Sayanagi	2013	Physics	Surfactant	PhD program, Physics, UW Madison
Matt Hin	2013	Mathematics	Surfactant	PhD program, Cornell
Sagar Batchu	2015	Physics	Surfactant	HMC
Peter Megson	2014	Physics	Surfactant	PhD Program, Physics, University of MD
Shreyas Kumar	2014	Mathematics and Physics	Biofilms, Surfactant	Software Engineer at LiveRamp, San Francisco
Joana Perdomo	2016	Mathematics	Surfactant	HMC
Caitlyn Bonilla	2016	Physics	Surfactant	HMC
Jeanette Liu	2016	Engineering	Pockels	HMC
Nathaniel Leslie	2017	Mathematics and Physics	Pockels	HMC
Dina Sinclair	2017	Mathematics	Surfactant	HMC
Kira Wyld	2017	Mathematics	Modeling	HMC
Zoe Tucker	2017	Mathematics	Modeling	HMC
Emily Lane	2018	Computer Science	Modeling	HMC
Evan Atchinson	2018	Physics	Modeling	HMC
Isaiah Evans	2018	Computer Science	Modeling	HMC