

RACHEL LEVY
Curriculum Vitae
5-22-2020

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EDUCATION

PhD Applied Mathematics, North Carolina State University, Raleigh, NC, June 2005
MS Applied Mathematics, North Carolina State University, Raleigh, NC, June 2003
MA Educational Media and Instructional Design, UNC Chapel Hill, Chapel Hill, NC, June 1996
BA Mathematics and Honors in English, Oberlin College, Oberlin, OH, May 1989

PROFESSIONAL EXPERIENCE

Mathematical Association of America, 1529 18th Street NW, Washington, DC 20036

Deputy Executive Director and Staff Principal Investigator (2018-present).

Duties: Responsibility for Program department (\$12.5M active grants) and Competitions department (\$2M annual revenue including \$900K donations), with four directors, multi-institution research collaborations and editorial boards running 14 programs and 12 competitions. Represented mathematics and the association at national meetings.

Accomplishments: Improved financial systems, restructured programs department, developed and hired for new positions, increased coordination and communication between departments. Diversified staff, competitions editorial boards, programs teams, and blog writers. Brought diversity and active learning lens to communications and marketing. Brought in new federal and private funding. Developed career initiatives including interview card game. Developed prize and certificate program to build community and broaden participation in mathematics competitions.

Harvey Mudd College, 301 Platt Blvd, Claremont, CA 91711

Associate Dean for Faculty Development for 100 faculty members (2015-18)

Duties: Facilitated professional development for postdocs, visitors and faculty at all ranks. Organized and facilitated fall faculty orientations, weekly faculty lunches, advised Dean and relevant committees on faculty needs, and coordinated efforts with Associate Deans from the Claremont Colleges and the Teaching and Learning Center.

Accomplishments: Developed and delivered new cross-institutional professional development for Department Chairs, built community among junior faculty, held mock interviews for visiting faculty and postdocs, built institutional memory by connecting junior and emeritus faculty.

Professor of Mathematics (2016-19)

Duties: Taught 2-2 with a one course teaching release as Associate Dean for Faculty Development. Served on several special curriculum committees designated by the President and the Chair of the Faculty.

Accomplishments: Built sustained mathematical modeling professional development for elementary school teachers in Pomona Unified School district, developed new first year and

senior elective courses in fluid mechanics and photography. Co-wrote three books, the *BIG Jobs Guide*, the *Guideline for Assessment and Instruction in Mathematical Modeling Education (GAIMME) Report* and *Mathematical Modeling: Computing and Communicating*. Launched Math Modeling Hub and coordinated a successful department review.

Associate Professor of Mathematics (2012-16)

Accomplishments: Co-wrote and published PDE textbook with Princeton Press. Awarded additional funding from NSF and HHMI. Ran fluid mechanics research lab with diverse student research teams conducting physical experiments and numerical simulations of surfactants spreading on thin fluid films. Published and mentored student publications in Applied Mathematics. Launched successful blog *Grandma got STEM* and delivered workshops for faculty on press communication.

Assistant Professor of Mathematics (2007-11)

Accomplishments: Chaired teaching and learning committee. Awarded NSF Focused Research Grant (by 2019, about 4 of the 560 FRG awards made to undergraduate institutions), Research Corporation, and Office of Naval Research funding as well as internal funding to support undergraduate researchers. Published in applied mathematics journals. Built fluids wet lab.

Co-Founder Business, Industry and Government (BIG) Mathematics Network

Site launch 2017 <https://bigmathnetwork.org/>

Co-creator of BIG Interview Card game sold by AMS and SIAM

Duke University Mathematics Department, 120 Science Drive, Durham, NC 27710

Postdoctoral Research Associate (2005-07)

Duties: 1-1 teaching load and research. Taught graduate mathematical modeling courses in mathematics and teacher education departments.

Accomplishments: Mentored undergraduate student who published work in university research publication Vertices.

North Carolina State University Mathematics Department, Box 8205, Raleigh NC 27695

Graduate Research Assistant (2001-05)

Duties: In addition to research, served as instructor of record in undergraduate differential equations course.

Accomplishments: selected for Microsoft Future Professors Fellowship, NC State Preparing the Professoriate Program and published work in applied mathematics and education journals. Awarded SIAM student paper prize.

Carolina Friends School, 4809 Friends School Rd, Durham, NC

Upper School Dean (1999-2001), Upper School Faculty (1997-2001), Middle School Faculty (1990-94)

Duke University Talent Identification Program, 300 Fuller St, Durham NC 27701

Mathematics Program Director (Summers 1990-91), Instructor (Summers 1987-89)

CONSULTING

SERP Institute, San Francisco CA

Mathematical modeling expert for online poster problems and videos. (2015-16)

National Science Foundation

Led development and facilitation of IPAM Mathematics Institute on Careers in Business, Industry and Government and produced summary report, Sept 2015.

Karin Spalink, Durham, NC

Instructional designer for machine translation project. (1996-97)

SAS Institute, Cary NC

Mathematics subject matter expert on software design team with programmer and graphic designer. (1995-96)

Durham Public Schools, Durham NC

Developed and delivered professional development for instructional technology for middle school teachers. (1992-94)

Duke University Talent Identification Program, Durham NC

Developed and delivered instruction for weekend scholars program (1990-92)

Developed math-by-mail program and accompanying quarterly *Mathegraphics*. (1987-88)

PUBLICATIONS

Books

1. R Levy, R Laugesen and F Santosa, *Business, Industry and Government (BIG) Jobs Guide*, Society for Industrial and Applied Mathematics (SIAM), 2018.
2. K Bliss, K Kavanagh, B Galluzzo, R. Levy, *Math Modeling: Computing and Communicating*, SIAM, 2018.
3. *Guidelines for Assessment and Instruction in Mathematical Modeling Education (GAIMME)*, in second edition, SIAM and Consortium for Mathematics and its Applications (COMAP), 2016, lead writer, K-8 chapters, available in Chinese translation, soon in Spanish.
4. M Shearer and R Levy, *Partial Differential Equations: Introduction to Theory and Applications*, Princeton University Press, 2015. Appropriate for elementary graduate and advanced undergraduate courses.

Refereed Book Chapters

1. R Stankiewicz Van Der Zanden, S Brown and R Levy, "A Window into Mathematical Modeling in Kindergarten" accepted for publication in *Mathematical Modeling in the Early Grades*, Springer, 2021.
2. R Levy, D Uminsky, "Formation of Ocean Surface Patterns by Cetacean Fluke Oscillations" in Childress S., Hosoi A., Schultz W., Wang J., *Natural Locomotion in Fluids*

and on Surfaces. The IMA Volumes in Mathematics and its Applications, vol.155. Springer, 2012.

Refereed Applied Mathematics Articles

* undergraduate student co-author

1. D Sinclair*, R Levy K Daniels, "Simulating surfactant spreading: Influence of a physically motivated equation of state," *European Journal of Applied Mathematics*, March 2017.
2. M Strait, M Shearer, R Levy, L Cueto-Felgueroso, and R Juanes. "Two Fluid Flow in a Capillary Tube," in *Collaborative Mathematics and Statistics Research*, pp. 149-161. Springer International Publishing, 2015.
3. R Levy, DB Hill, MG Forest, and JB Grotberg. "Pulmonary Fluid Flow Challenges for Experimental and Mathematical Modeling," *Integrative and Comparative Biology*, vol. 54, no. 6, pp. 985-1000, 2014.
4. SL Strickland, M Hin*, MR Sayanagi*, C Gaebler*, KE Daniels, and R Levy, "Self-healing dynamics of surfactant coatings on thin viscous films," *Physics of Fluids* vol. 26, no. 4, 2014.
5. M Keeter*, D Moore*, R Muller*, E Nieters*, J Flenner, SE Martonosi, AL Bertozzi, AG Percus, and R Levy (Conference Proceeding) "Cooperative search with autonomous vehicles in a 3d aquatic testbed," in *IEEE American Control Conference (ACC)*, pp. 3154-3160, 2012.
6. R Levy, D Uminsky, A Park*, and J Calambokidis, "A theory for the hydrodynamic origin of whale flukeprints," *International Journal of Non-Linear Mechanics* vol. 46, no. 4, pp. 616-626, 2011.
7. R Levy, S Rosenthal*, J Wong*, "Engineering flow states with localized forcing in a thin Marangoni-driven inclined film," *Physical Review E* vol. 82, no. 5, 2010.
8. N Grunewald, R Levy, M Mata, T Ward, and AL Bertozzi, "Self-similarity in particle-laden flows at constant volume," *Journal of Engineering Mathematics* vol. 66, no. 1-3, pp. 53-63, 2010.
9. E Peterson, M Shearer, TP Witelski, R Levy, "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 part 2, American Mathematical Society, 2009.
10. R Levy, M Shearer, TP Witelski, "Gravity-driven thin liquid films with insoluble surfactant: smooth traveling waves," *European Journal of Applied Mathematics* vol.18, no. 06, pp. 679-708, 2007.
11. TP Witelski, M Shearer, R Levy, "Growing surfactant waves in thin liquid films driven by gravity," *Applied Mathematics Research Express* vol. 15487, 2006.
12. R Levy and M Shearer, "The motion of a thin liquid film driven by surfactant and gravity," *SIAM Journal on Applied Mathematics* vol. 66, no. 5, pp. 1588-1609, 2006.
13. R Levy and M Shearer, "Kinetics and nucleation for driven thin film flow," *Physica D: Nonlinear Phenomena* vol. 209, no. 1, pp. 145-163, 2005.
14. R Levy and M Shearer, "Comparison of two dynamic contact line models for driven thin liquid films." *European Journal of Applied Mathematics* vol. 15, no. 06, pp. 625-642, 2004.

Refereed Mathematics Education Articles

1. ML Hernández, R Levy, MD Felton-Koestler and R Zbiek, "Modeling in the High School Curriculum," *Mathematics Teacher*, vol. 110, no. 5, Dec 2016/Jan 2017.
2. N Lape, et. al., "Probing the Flipped Classroom: Results of A Controlled Study of Teaching and Learning Outcomes in Undergraduate Engineering and Mathematics," 2016 *ASEE Annual Conference & Exposition*, June 2016.
3. D Teague, K Fowler, and R Levy, "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, 2016.
4. P Turner, R Levy, and K Fowler, "Collaboration in the Mathematical Sciences Community on Modeling Across the Curriculum," *Chance Magazine*, vol. 28, no. 4, 2015.
5. D Yong, R Levy and N Lape, "Why No Difference? A Controlled Flipped Classroom Study for an Introductory Differential Equations Course," *PRIMUS*, vol. 25, no. 9-10, pp. 919-933, 2015.
6. R Levy, "Industrial Mathematics Inspires Mathematical Modeling Tasks with High Cognitive Demand," *The Princeton Companion to Applied Mathematics*, Ed. Nicholas J. Higham, Princeton University Press, 2015.
7. NK Lape, R Levy, DH Yong, KA Haushalter, R Eddy, and N Hankel, "Probing the Inverted Classroom: A Controlled Study of Teaching and Learning Outcomes in Undergraduate Engineering and Mathematics," *ASEE Annual Conference*, Paper ID #9475, 2014.
8. R Levy, "Soap and Slope: Mathematical Adventures in Fluid Dynamics," *Mathematics Teacher* vol. 107, no. 5, pp. 378-384, 2014.
9. R Levy, M Shearer, and P Taylor. "Automated review of prerequisite material for intermediate-level undergraduate mathematics." *PRIMUS* vol. 17, no. 2, pp. 167-180, 2007.
10. DE Finkel, C Kuster, M Lasater, R Levy, JP Reese, and ICF Ipsen. "Communicating applied mathematics: Four examples." *SIAM Review* vol. 48, no. 2, pp. 359-389, 2006.

Lead writing for professional reports

1. Report from the NSF-IPAM Workshop on Mathematical Sciences Internships, www.ipam.ucla.edu/wp-content/uploads/2015/10/NSF-IPAM-industry-internship-workshop-report.pdf, October 2015.
2. Modeling Across the Curriculum II, Society for Industrial and Applied Mathematics, www.siam.org/reports/ModelingAcrossCurr_2014.pdf, 2014.
3. Undergraduate Applied Mathematics Programs, Society for Industrial and Applied Mathematics, www.siam.org/reports/undergraduate_14.pdf, 2014.

Open source software and documentation

J Claridge, R Levy and J Wong*, "Solving Nonlinear High Order PDE Systems: Methodology and a Clawpack library," documentation and code on GitHub, 2013.
https://github.com/claridge/implicit_solvers

FUNDING

Funding Awarded while Faculty at Harvey Mudd College

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,” NSF-STEM-C-1441024, J Suh (GMU-PI), R Levy (HMC-PI), P Seshaiyer (co-PI), E Burroughs (MO-PI), 09/2014-08/2018, \$1,299,959, HMC Award \$352,393.

“Probing the Inverted Classroom: A Controlled Study of Teaching and Learning Outcomes in Undergraduate Chemistry, Engineering, and Mathematics,” NSF-TUES-1244786, NK Lape (PI), R Levy (co-PI), DH Yong (co-PI), 10/2013-09/2017, \$222,844.

“Optimizing the Mathematics Postdoctoral Experience: A Teaching and Research Postdoctoral Fellowship at Harvey Mudd College,” NSF-MCTP-083996, A Bernoff (PI), R Levy (co-PI), J Jacobsen (co-PI), 07/2009-06/2015, \$800,000.

“Symposium & Workshop: Shaking, dripping and drinking: surface-tension phenomena in organismal biology for SICB Annual Meeting, Austin, Texas, January 2014,” NSF-1347346, D Hu (PI), R Levy, L Bourouiba, 11/2013, \$15,913.

Principal Investigator, “FRG-Collaborative Research: The Dynamics of Thin Liquid Films: Mathematics and Experiments,” Rachel Levy (HMC PI) Karen E. Daniels (NCSU PI), M Shearer (NCSU PI) and TP Witelski (Duke PI), 06/2010-05/2015, Award number 0968154, Total award \$780,951, HMC award \$142,156.

Office of Naval Research

“Mathematics of Communication and Control for Dynamic Mobile Aquatic Sensors”, ONR-10513283, R Levy (PI) and A Percus (co-PI); 04/2010–09/2012, \$165,000.

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.

Harvey Mudd College Internal Funding

Grants supporting undergraduate summer research from \$1000 incentive awards to \$20,000 HHMI collaborative research award.

Awarded while DED of Mathematical Association of America

Gift of Philippe and Claire-Lise Tondeur

Award to the Mathematical Association of America to develop career initiatives under advisement of the BIG Math Network and in coordination SIAM and AMS who received similar gifts, 2018-present, \$100,000.

National Science Foundation

Supplement to Progress through Calculus to create an MAA Notes volume based on diversity, equity and inclusion work, 2019-20, J Ellis Hagman (lead for supplement), NSF-EHR-1430540, \$49,889.

“Regional Professional Development for VITAL faculty. A pilot program to reach visiting faculty, instructors, teaching assistants, adjuncts, and lecturers,” D Kung (PI), NSF-EHR-1903992, 1/2019-12/2019, \$49,973.

Gift of family of CJ Desai for Awesome Math Girls

Establishing the Maryam Mirzakhani AMC 10A prize and certificates recognizing five young women from each of the 29 MAA sections beginning in 2020, \$30,000.

MAA Programs Portfolio Managed as DED and Staff Principal Investigator

American Mathematics Competitions

Supervised Directors of the AMC 8, AMC 10/12, AIME, USAJMO, USAMO, and Putnam Competitions, Summer Mathematical Olympiad Training Program, Curriculum Inspirations, Mathematical Olympiad Award Ceremony and new Maryam Mirzakhani Awards, which are partially funded by ~\$900K annually from corporate and foundation sponsors, including the Akamai Foundation, Art of Problem Solving, Two Sigma, Awesome Girls Math, D. E. Shaw, Ansatz Capital, and MathWorks.

Dolciani – Halloran Foundation

Mathematics Enrichment Grants, Director N Neudauer, 1/2018-12/2021, \$258,000

National Science Foundation

“The Mathematical Education of Teachers as an Application of Undergraduate Mathematics (META Math)”, D Ensley (PI), NSF/DUE-1726624, 09/2017 to 8/2021, \$1,211,962.00.

“Travel Grants for Presentations by Undergraduates at National Meetings”, C Simmons (PI), NSF/DMS-1341843, \$799,768 10/2013 to 9/2019.

“Improving the Preparation of Graduate Students to Teach Undergraduate Mathematics”, J Bookman (PI), NSF/DUE-1432381, \$1,000,832, 08/2014 to 07/2019.

“Collaborative Research: Get the Facts Out: Changing the Conversation around STEM Teacher Recruitment”, W Adams (PI), NSF/DUE – 1821710, \$2,512,620, 7/2018 – 6/2023 (MAA until 10/2019).

“Progress through Calculus”, D Bressoud (PI), NSF/DUE-1430540, \$2,499,919 01/2015 to 12/2019.

“REU Site: National Research Experiences for Undergraduates (NREUP)”, L Douglas (PI), NSF/DMS – 1652506, 6/2017 to 5/2020, \$900,000.

“PIC Math: Preparation for Industrial Careers in the Mathematical Sciences”, R Levy (PI), NSF/DMS – 1722275, 08/2017-07/2021, \$1,534,512.

“StatPREP: Faculty Development for a Data-Centric World”, R Levy (PI), NSF/DUE-1626337, 10/2016 to 9/2021, \$1,856,724.

“Collaborative Research: What Difference does Early-Career Faculty Development Make?” S Laursen (PI), NSF/DUE-1821704, 10/2018 – 9/2023, \$151,926.

Tensor Foundation

Tensor Women in Mathematics Grants Program, Director R De Coste, 1/2018-12/2022, \$499,250

Tensor SUMMA (Strengthening Underrepresented Minorities in Mathematics Advancement) Grant Program, Director R Dance, 1/2018-12/2022, \$499,250

HONORS

AMS Congressional Fellowship, 2020-2021.

Fulbright Specialist Roster, 2015-present.

HMC Leadership Award 2016 Outstanding Faculty Member, April 2016.

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

Iris and Howard Critchell Chair, Harvey Mudd College, 2011-12.

Avery Professor, Claremont Graduate University, Spring 2011.

Project NExT Fellow, American Institute of Mathematics, 2007.

Microsoft Future Professors Fellowship, 2003-04.

DIVERSITY, EQUITY AND INCLUSION ACCOMPLISHMENTS

MAA Conference Accessibility (2018-2020)

Organized group of MAA DC-MD-VA Section officers, faculty from Gallaudet University and Rochester Institute of Technology National Technical Institute for the Deaf and staff from the Mathematical Association of America and the American Statistical Association to improve accessibility of our conferences to deaf and hard-of-hearing participants by educating our members and improving our capability for organizing and funding captioning and ASL interpreters.

MAA VITAL Faculty programs (2018-2020)

Coined the acronym “VITAL” to raise issues facing faculty in temporary and low-pay positions such as Visitor, Instructor, TA, Adjunct and Lecturer. Term now used for NSF funded professional development program and new MAA membership category within departmental memberships.

MAA American Mathematics Competitions (2018-2020)

Initiated revision of strategic plan to put DEI at the center of the MAA AMC programs, beginning with a focus on gender. Worked with executive team to recruit women to half of the co-editor-in-chief roles, including the top competition, when in the past women were hardly represented on the boards. Brought funding for new Maryam Mirzakhani prize and certificate program recognizing top female participants and building community. Brought inclusivity discussions and professional development into summer Mathematical Olympiad Program. Initiated conversations about participation among African-American youth and created new partnerships to build participation and success. Diversified team leading the Curriculum Inspirations initiatives.

BIG Career Interview Game (2019)

Worked with past-president of the Benjamin Banneker Association Brea Ratliff and Human Resources Professional Nicole Morgan to develop an interview card game highlighting a variety of jobs available to people with expertise in the mathematical sciences. Game can be played cooperatively and encourages conversation. Cards include commonly asked legal and illegal interview questions with tips for how to address each as well as general interview guidance. Note that illegal questions disproportionately impact interviewees who are presumed to have protected characteristics such as age, race, disability, parental status, marital status, country of origin.

MAA MathValues Blog (2018-2020)

Worked with head of Communications to diversify previously all-white (and originally all male) blog leadership by including Carrie Diaz-Eaton, chair of MAA committee on minority participation, Maria Hernandez, celebrated mathematical modeling high school teacher, Meera Desai, high school blogger on inclusivity in math competitions and founder of Awesome Math Girls, and a collective of writers from the National Association of Mathematicians. In addition, regularly wrote and solicited posts about values related to DEI.

Grandma Got STEM (2013-2018)

Created and edited internationally recognized blogpost to call attention to the fact that gender, maternity and age are not relevant to whether someone is a novice or an expert. Featured in many print, web, and radio newscasts, including Slate, boingboing, NPR's Tell Me More, Australian Radio (ABC Broadcasting), French Slate, and the Calcalist (Israel).

Sacred Sistahs STEM Career Day (2010-2015)

Worked with Dr. Talithia Williams at Harvey Mudd College as she developed this program with community partners. Served as a plenary speaker, parent session co-facilitator with a high school guidance counselor, scientific session organizer and undergraduate volunteer

mentor for this yearly conference bringing seventh grade girls (and now boys) from the Southern California region to explore careers in STEM.

Research Mentoring (2007-2018)

Led diverse undergraduate research groups at Harvey Mudd College in both applied mathematics research on fluid mechanics and mathematics education research on mathematical modeling. Teams included a majority of women, several first generation students, many students of color, and many students with mental health challenges. Students included two Goldwater fellows and one Watson fellow. Their work was published and presented at national scientific meetings.

WRITING RECOGNITION

NCTM Linking Research and Practice Outstanding Publication Award, ML Hernández, R Levy, MD Felton-Koestler and R Zbiek, "Modeling in the High School Curriculum," *Mathematics Teacher*, vol. 110, no. 5, Dec 2016/Jan 2017.

MAA Teaching Tidbits, 2016-17 Most Read Blogpost, "5 Ways to Respond when Students Respond with Incorrect Answers."

The Best Writing on Mathematics 2016, Featured article, "Industrial Mathematics Inspires Mathematical Modeling Tasks with High Cognitive Demand" from Princeton Companion to Applied Mathematics, 2016.

American Scientist Macroscope Blog, Most Read Blogpost, 2015 and 2016, "5 Reasons to teach Mathematical Modeling" www.americanscientist.org.

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

RECOGNITION THROUGH SELECTION FOR NATIONAL SERVICE

Advisory Boards

ICERM Mathematics Institute Education Advisory Board 2019-present

TPSE Mathematics Advisory Group (MAG), 2016-present.

NSF CodeR4Math Project Advisory Board 2019-present

NSF WATCH-US Program Advisory Meeting 2016-18.

CBMS Research Advisory Group, 2017-19.

MAA Instructional Practices Guide Advisory Group, 2017-18.

Society for Industrial and Applied Mathematics (SIAM)

SIAM Vice President for Education, 2015-18.

SIAM Education Committee Member, 2008-18.

NCTM-SIAM Committee Member, 2015-18.

SIAM Career Opportunities Committee, 2015-16.

Judge, Moody's Mega Math Competition, SIAM, 2013-15.

Conference Board of the Mathematical Sciences (CBMS)

MAA representative, CBMS board meetings, 2018-20.

SIAM representative, CBMS board meetings, 2014-18.

Active Learning Statement writing committee, 2016.
SIAM representative, meeting on K-12 Standards, 2009.

Mathematical Association of America (MAA)

Science Policy Committee, 2016-present.
Contributor, Curriculum for Undergraduate Programs in Mathematics Guide, 2015-16.
Facilitator, Common Vision Meetings, April 2015 and May 1-3, 2015.

National Science Foundation funded programs

Panelist for Division of Mathematical Sciences Proposals, Spring 2010, 2012 and 2013.
Panelist for Division of Undergraduate Education, Spring 2020.

Transforming Post-secondary Education in Mathematics (TPSE Math)

Teaching Practices and Strategies working group, 2019-present.
Panelist, Morehouse meeting, June, 2019.
Presenter, Chairs +1 Meeting, UMBC, March 2017.
Presenter, Chicago meeting, Sept 2015.

Association for Women in Mathematics

Committee on Committees, 2016-18.
Frequent graduate student and postdoctoral paired mentor at conferences.

TEACHING

Harvey Mudd College

MATH 15	Calculus Review	F13
MATH49A	Fluidity: Art, Science and Images	F17
WRIT 001	Identity and Community	F16
WRIT 001	Who Needs Feminism	F13
WRIT 001	Identity and Society in Graphic Novels	F10, Su11, Su12
WRIT 001	Identity and Technology	F11
WRIT 001	Science Communication in Popular Media	F12
MATH 30	Single and Multivariable Calculus	F11
MATH 45	Ordinary Differential Equations I	S08, F08, S09-S14,16,17
MATH 64	Ordinary Differential Equations II	S10
MATH 65	Linear Algebra and Differential Equations II	F17
ENGR72	Engineering Mathematics	S17, S18
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	2008-13, 2015-16, 2017-18
ART 179D	Fluidity: Art, Science and Images	F15, Ind Study S16
MATH 189	Motivation in Mathematics	S17

MATH 189	Anti-Human Trafficking Research	F17
MATH 189	Math Modeling Education	S18

Gwangju Institute of Science and Technology (South Korea)

Mathematical Modeling for Engineers	Summers 2016, 17
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Duke University

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

Carolina Friends School (Durham, NC)

Upper School: Geometry, Algebra II, Pre-calculus, 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
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Selected Harvey Mudd College service

Chair of Mathematics Department Review, 2015-16; President's Computing Across the Curriculum (C3) Committee, 2015-16; Core Curriculum Committee 2015-16; Chair of Computing Committee, 2013-14; Mathematics Department Industrial Clinic Program Assistant Director, 2012-13; Chair of Teaching and Learning Committee, 2010-13.

PHD COMMITTEES

1. Michael Franklin (2013 PhD) Electrowetting-Based Microfluidics: Mathematical Modeling and Numerical Simulation, under supervision of Dr. Ali Nadim, Claremont Graduate University Mathematics Department.
2. Stephen Strickland (2015, PhD) Surfactant Dynamics: Spreading and Wave Induced Dynamics of a Monolayer, under supervision of Dr. Karen Daniels, NCSU Physics.

RESEARCH WITH UNDERGRADUATE STUDENTS AT HARVEY MUDD COLLEGE

Mathematical modeling for the early grades

Summer 2018 Kaitlyn Loop, Aria Beaupre, Athena Li; Fall 2017 Kaitlyn Loop, Aria Beaupre
 Summer 2017 Emily Lane, Jacob Cordeiro, Marcelo Almora-Rios, Alondra Torres Navarro,
 Alex Ravnik, Laurel Newman, Kaitlyn Loop; Summer 2016 Angel Sierra, Jacob Corediero,
 Emily Lane, Lin Yang, Dina Sinclair; Summer 2015 Zoe Tucker, Kira Wyld, Evan Atchison,
 Isaiah Evans, Emily Lane

Anti-Human Trafficking

Fall 2017 Jill Cardamon (co-advised with Dr. Renata Konrad, WPI)

Tsunami Modeling

Fall 2017 Rachel Barcklay (co-advised with Dr. Tanja Srebotnjak, HMC)

Image processing for Huntington aggregates

Summer 2016 Rebecca Harmon

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)

Early algebraic thinking in elementary school students

2009-2010 Mathematics thesis: Ivan Hernandez

Optimization of renewable energy installments in California

2009-2010 Amelia Musselman, Andrea Levy

Experimental and numerical study of whale flukeprints

2008-2010 Hendrik Orem, Dmitri Skjorshammer, 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

Thin liquid films: numerical simulations

Summer 2007 Stephen Rosenthal

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.
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.
3. Hendrik Orem (HMC Mathematics 2009), Basins of Attraction and Perturbed Numerical Solutions using Euler's Method, SIURO, Volume 1, Issue 2, 2008.
4. Caroline Yang (Duke Math '06), Modeling Blood Flow in Arteries, Vertices, Summer 2006.

Mathematics undergraduate theses advised

1. Experiments on Surfactants and Thin Fluid Films, Peter Megson (HMC Physics 2014)
2. Simulations of Surfactant-Driven Thin Film Flow, Shreyas Kumar (HMC Physics 2014)
3. Russian Mathematical Pedagogy in Reasoning Mind, Maia Valcarce (HMC Mathematics 2012)
4. Early Algebraic Thinking, Ivan Hernandez (HMC Independent Program of Study 2012)
5. Simulations of Surfactant Spreading on Glycerine, Jeffrey Wong (HMC Mathematics 2011)
6. Abstractions of Control for Swarms, Georgi Dinolov (HMC Mathematics 2011)

Mathematics clinic industrial capstone projects advised

1. 2017-18 Historical processing of Sanborn Maps, EDR

- Daniel Zhang (Project Manager), Mehdi Drissi, Jordan Haack, Jeffrey Carney
2. 2016-17 Anomaly Detection for Microsoft Bing
Angela Chin (Project Manager), Lucy Gao, Sam Jun, Allison Kingman,
 3. 2012-13 Optimizing Drilling Rate With Machine Learning Shell Oil
Alexandra Schofield (Project Manager), Kyle Chakos, Sam Grey, John Wentworth
 4. 2011-12 Livingston Cooperage Optimization Model, E&J Gallo Winery
Keiko Hiranaka (Project Manager), Kevin Black, Leon Liu, Maksym Taran
 5. 2010-11 Application of Robust Control to Spacecraft Attitude, Space Systems Loral
Jacob Bouricius (Project Manager), Maxwell Lee, Andrea Levy, Margaret Rogers
 6. 2009-10 Modeling Fluid Transport in Subcutaneous Tissue, Carefusion
Ben Goldenberg (Project Manager), Chris Fathauer, Simon Just, Daniel Patterson
 7. 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 research presentations

1. Caitlyn Bonilla, Jeanette Liu, Dina Sinclair, Nathaniel Leslie, Poster Presentation
"Surfactant Spreading on Viscous Fluid Films," American Physical Society Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014.
2. Caitlyn Bonilla, Jeanette Liu, Dina Sinclair, Nathaniel Leslie, "Surfactant Spreading on Viscous Fluid Films," HMC Student Research Poster Session, September 2014.
3. Jeanette Liu, "Surfactant Spreading on Viscous Fluid Films," Mathematical Biosciences Institute (MBI) Undergraduate Capstone Conference, Poster Presentation, August 2014.
4. Dina Sinclair, surfactant workshop, Sacred Sistah's Conference for African American Girls, , Harvey Mudd College, April 26, 2014.
5. Dina Sinclair, Soap and Slope Workshops, Sacred Sistahs Conference, HMC, April 2014.
6. Joana Perdomo, Panelist, Mudd on a Mission campaign, April 5, 2014.
7. Joana Perdomo, "Surfactant Spreading on Viscous Fluid Films," NSF Louis Stokes Alliance for Minority Participation Symposium, University of California at Irvine, Poster Presentation, February 8, 2014.
8. Matt Hin and Richard Sayanagi, Poster Presentation, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," American Physical Society Division of Fluid Dynamics Annual Meeting, San Diego, November 2012.
9. Matt Hin and Richard Sayanagi, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," CCMS Student Research Poster Session, September 2012.
10. Matt Hin and Richard Sayanagi, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," HMC Student Research Poster Session, September 2012.
11. Dong-Hyeon Park and Stephanie Porter, HMC Student Research Poster Session, "Sensitivity to Noise in Particle Filters for 2-D Tracking Algorithms," September 2012.
12. Wendy Brooks and Shreyas Kumar, "Analysis of biofilms," HMC Student Research Poster Session, September 2012
13. Matt Hin and Richard Sayanagi, "Hole-Closing of a Surfactant Layer on a Thin Fluid Film," . NCSU Student Research Poster Session, August 2012.
14. Eric Nieters and Matt Keeter, Cooperative Search with Autonomous Vehicles in a 3D Aquatic Testbed, American Control Conference Talk, Montreal Canada, June 28, 2012.

15. Maia Valcarce, "Russian Mathematical Pedagogy in Reasoning Mind," Regional MAA Meeting, Poster presentation and Poster Prize, April 2012.
16. Daisy Hernandez and Katarina Hoeger, Soap and Slope Workshop, Sacred Sistahs Conference, April 2012.
17. Cameron Conti, Eric Autry and Gregory Kronmiller, "Simulations of surfactants on thin films," KAUST Undergraduate Mathematics Conference Poster, January 2012.
18. Georgi Dinolov presented his thesis research at the Loyola Marymount Pacific Undergraduate Mathematics Conference, March 2011.
19. Jeffrey Wong, presented his Surfactant Research Code, Loyola Marymount Pacific Undergraduate Mathematics Conference, March 2011.
20. SIAM Conference on Computational Science and Engineering, Space Systems/Loral Clinic Project, Jake Bouricius, March 2011.
21. Matthew Keeter, Dan Moore, Ryan Mueller, and Eric Nieters, "Cooperative Search with Autonomous Vehicles in a 3D Aquatic Testbed," JMM, January 2011.
22. NCSU Thin Films Day, Surfactant simulations talk, Jeffrey Wong, 2010.
23. SIAM Annual Meeting, San Diego, Steven Rosenthal, July 2008.
24. Joint Mathematics Meeting, San Diego, Localized Forcing in Thin Liquid Films, Steven Rosenthal, January 2008.

PUBLISHED WORK IN DISCIPLINARY PRESS (NOT REFEREED)

Editorial work

1. Editor, MAA MathValues Blog, 2018-present.
2. Editor, *The Privilege of Flight* by Iris Cummings Critchell, 2020.
3. Founding Contributing Editor, MAA Teaching Tidbits, 2016-17, Editor, 2018-present.
4. Editorial Board of Math Horizons, 2013-present.
5. Founding Editor, Grandma got STEM, 2014-present.
6. Founding Editor, BIG Math Network Blog, 2016-17.
7. Editor-in-Chief of SIAM Undergraduate Research Online (SIURO), 2012-14.
8. Associate Editor of SIAM Undergraduate Research Online (SIURO), 2011-12.

Mathematical modeling education and active learning

1. R Levy, "Mathematics Society Presidents Endorse Active Learning Statement," *SIAM News*, December, 2016.
2. R Levy, "Teaching Mathematical Modeling to Students: from Kindergarten through College and Beyond," *SIAM News*, September, 2016.
3. B Kwon and R Levy, "Launch of the Center for Mathematical Modeling: Carlos Castillo-Chavez in El Salvador," *SIAM News*, May 2, 2016.
4. B Kwon and R Levy, "SIAM at the National Math Festival," *SIAM News*, July 15, 2015.
5. R Levy, The Moody's Mega Math Challenge Marks 10th Year, *SIAM News*, June 1, 2015.
6. R Levy "5 Reasons to Teach Mathematical Modeling," American Scientist Macroscopic Blogs, May 5, 2015.
7. R Levy, K Maki and K Fowler, "How Can the SIAM Community Help Embed Math Modeling in K-16 Curricula?" *SIAM News*, April 1, 2015.
8. R Levy, E Chow, B Kwon, K Socha, M McCarthy, and P Turner, "SIAM Education Subcommittee Report on Undergraduate Degree Programs in Applied Mathematics,"

SIAM Review, February 2015.

9. NK Lape, R Levy, and D Yong, "Can Flipped Classrooms Help Students Learn? We're Trying to Find Out," *Future Tense*, April 25, 2014.

Women in mathematics

1. R Levy, Encyclopedia entries on Euphemia Haynes Lofton and The Association for Women in Mathematics, in *Women in American History: A Social, Political, and Cultural Encyclopedia and Document Collection*, edited by Peg A. Lamphier and Rosanne Welch, ABC-CLIO, 2016.
2. R Levy, "Grandma Got STEM turns 100 posts old!" *Journal of Humanistic Mathematics* 3, no. 2, pp. 149-152, 2013.

Mentoring and careers

1. R Levy, "Birth of the BIG Math Network", *MAA Focus*, Dec 2017/Jan 2018.
2. L Venkataramanan, R Levy, and B Kolata "Careers Outside Academia: How Should Math and Applied Math Students Prepare?" *SIAM News*, September 1, 2016.
3. R Levy, "NSF-IPAM Workshop Tackles Workforce Issues", *SIAM News*, April 1, 2016.
4. R Levy, "Internships Connect Math Students to New Career Paths," *American Scientist Macroscopic Blogs*, July 7, 2015.
5. R Levy, "Postdoc Mentorship Can Launch Careers", *American Scientist*, Vol. 102, No. 6, November-December 2014.

Mathematics communication

1. R Levy, "Should Your Research Be on YouTube?" *SIAM News*, June 1, 2015.
2. R Levy, "Every Math Major Should Take a Public Speaking Course," *Math Horizons*, April 2, 2014.
3. R Levy, F Lichtman and D Hu, "The Scientist-Reporter Collaboration," *SIAM News*, April 1, 2014.

Applied mathematics programs and projects

1. L Bourouiba, D Hu, and R Levy. "Surface-Tension Phenomena in Organismal Biology: An Introduction to the Symposium." *Integrative and comparative biology*, icu113, 2014.
2. R Levy and P Turner, "SIAM Education Committee Releases Timely Report on Undergraduate Programs", *SIAM News*, June 1, 2014.
3. T Williams and R Levy, "Hitting the Target: Connecting Parents to STEM", *MAA Focus*, Dec 2013-Jan 2014.
4. R Levy, "Quantitative Approaches to Sustainability Seminars." *Notices of the AMS* 60, no. 4, 2013.
5. R Levy and P Turner, "SIURO: A Flourishing Home for Undergraduate Research," *SIAM News*, October 7, 2013.

Webinars

1. MIT Electronic Seminar in Mathematics Education (ESME), Project-based learning, April 29, 2020.
2. Colorado Council of Teachers of Mathematics, Virtual Mathematical Modeling Education

PD with Robyn Stankiewicz Van Der Zanden, April 21, 2020.

3. MIT Electronic Seminar in Mathematics Education (ESME), Active Learning Online panel discussion, March 7, 2020.
4. National Council of Supervisors of Mathematics, Plenary talk, Building Capacity in Statistics and Mathematical Modeling, March 30, 2020.
5. "Professional Development for K-8 Mathematics Educators: Views on Content Knowledge/MKT & Mathematical Modeling from Two MSP Projects," delivered with April Strom for MSPNet Academy, October 12, 2017.
6. "Getting Started with Mathematical Modeling in the Early Grades," Association of Mathematics Teacher Educators (AMTE), July 18, 2016.
7. "Mathematical Modeling 101" in Discovery Learning's Mathematical Modeling Putting Practice into Play Series delivered with Andrew Stadel, October 15, 2015.
blog.discoveryeducation.com/blog/2015/10/14/getting-started-with-mathematical-modeling
8. "Math Students with Skills You Want and Where to Find Them" for University Industry Demonstration Partnership, delivered with Jennifer Pearl (NSF), April 15, 2015.
9. Collaboratory "Classrooms for Flipped or Blended Learning" for Learning Spaces delivered with Nancy Lape, April 15, 2015.

Active learning and equity workshops

1. Workshop on course redesign for equity and inclusivity for Math and Equity in Southern California (MESCal), February 17, 2018.
2. Workshop on course redesign for equity and inclusivity for Claremont Colleges Center for Teaching and Learning, Jan 23, 2018.
3. Workshop on active inclusive teaching for Gallaudet University STEM departments, August 25 and October 19, 2017.
4. Workshop on active learning and curriculum design for Spelman College, Mathematics department, August 11, 2017.
5. Workshop to share teaching practices across departments for Habib University, All faculty departments, April 8, 2016.
6. Active and Flipped Learning Strategies, Korea Conference for Educational Technology, November 29, 2014.
7. Workshop, Active Learning and Flipped Classrooms, Seoul National University, Korea, November 28, 2014.

Mathematical modeling workshops

1. Critical Issues in Mathematics Education, Mathematical Modeling: Community and Cultural Contexts, co-organized with Cynthia Anhalt, www.msri.org/workshops/919, March 2019.
2. NCSSM Teaching Contemporary Mathematics Conference, Groupwork and the American Mathematics Competitions, January 2019.
3. Immersion K-6 Teacher Mathematical Modeling Professional Development, July 25-29, 2018.
4. Workshop "Lessons Learned from the IMMERSION program: Math Modeling in the Elementary Classroom," NCTM Innov8 Conference, November 2017.
5. Immersion K-6 Teacher Mathematical Modeling Professional Development, July 24-28,

2017.

6. Minitutorial with Tom Witelski and Jeffrey Humphreys, “Designing a Mathematical Modeling Course,” SIAM Annual Meeting, Boston, July 2016.
7. Immersion K-6 Teacher Mathematical Modeling Professional Development, July 25-29, 2016.
8. Immersion K-6 Teacher Mathematical Modeling Professional Development, August 3-7, 2015.
9. Mathematical Modeling Workshop for in-service teachers in Graduate School at Seoul National University, July 5, 2015.
10. Gwangju Institute of Science and Technology (GIST), Korea, Workshop on mathematics education at interdisciplinary meeting on undergraduate education, December 8, 2014.
11. NSF-SIAM-ASA Conference on Modeling Across the Curriculum II, organized with Peter Turner (Clarkson), Katherine Socha (MFA), Jeff Humphreys (BYU), Lead of the Early Grades Working Group, January 2014.
12. Teaching Contemporary Mathematics Workshop, “Industry-inspired mathematics problems,” NCSSM, January 2009.

Communication workshops and events

1. Press Communication Workshop with Flora Lichtman for the MAA Science Policy Committee, Joint Mathematics Meetings, January 2019.
2. Communication Doctor’s Booth, SIAM Annual Meeting, July 2015 and 2016.
3. SIAM Competition: Should your Research Be on YouTube? July 2015.
4. Communication Doctor’s Booth, SIAM Computational Sciences and Engineering Conference, 2015.
5. So you want to tell your research story? American Physical Society Division of Fluid Dynamics, With David Hu, Nicole Sharp, Jason Bardi, Flora Lichtman, November 21, 2014.
6. Press workshop for Faculty, Rochester Institute of Technology, November 11, 2014.
7. How to Collaborate with the Press, with Flora Lichtman, SIAM Annual Meeting, Chicago, July 2014.
8. Press communication workshop with Flora Lichtman, Society for Integrative and Comparative Biology, January 2014.
9. How to Communicate your Research to News Outlets with Flora Lichtman and David Hu, Society for Integrative and Comparative Biology Annual Meeting, Austin TX, Jan 4, 2014.

Workshops on careers in business, industry and government (BIG)

1. SIAM Minitutorial on Business, Industry and Government Connections, July 2017.
2. Data Science Panel and Career Panels, SIAM Annual Meeting July 2017.
3. Workshop, TPSE Math Chair +1 Meeting, Introducing the BIG Math Network: practical ideas to connect academic departments with Business, Industry and Government, March 2017.
4. BIG Math Career Panel, Joint Mathematics Meetings, January 2017.
5. BIG Careers Panel, SIAM Annual Meeting, July 2016.
6. NSF-IPAM Workshop on Industrial Internships in the Math. Sciences, UCLA, September,

2015.

7. Workshop on Professional Presentations for Innovation Immersion Network, UNIST, South Korea, July 7, 2015.
8. Presentation to NC State Undergraduate Research Advisory Committee October 1, 2014.

Keynote and plenary lectures

1. SEMINAL Conference, "A mathematical modeling lens on data gathering and analysis for educational improvement," upcoming June 5, 2020.
2. Boeing Lecture, University of Washington Applied Mathematics Department, "Mathematical Modeling from Kindergarten to Industry," Nov 7, 2019.
3. Colloquium and Tensor Student lunch, Virginia Tech, "Mathematical Modeling from Kindergarten to Industry," October 22, 2019.
4. Colloquium, "Mathematical Modeling from Kindergarten to Industry," Virginia Commonwealth University October 21, 2019.
5. Rigor, Reproducibility, Transparency at the Interdisciplinary Interface, "Mathematical Modeling Education as a Foundation for Rigor, Reproducibility and Transparency," Indiana University, October 1, 2019.
6. MAA Section Meeting, Golden Section Plenary, "Mathematical Modeling from Kindergarten to Industry," Durango, Colorado, April 2019.
7. National Academies Data Science Roundtable Plenary, "Inviting Mathematics to the Data Science Table," Irvine, March 30, 2019.
8. MAA EPaDel Section Meeting, "Mathematical Modeling from Kindergarten to Industry," March 23, 2019.
9. MAA Section Meeting, LA/MS Section Plenary, "Mathematical Modeling from Kindergarten to Industry," Jackson MS, February, 2019.
10. MAA Metro Next Plenary, "Mathematical Modeling from Kindergarten to Industry," New York, January 13, 2019.
11. AMS Committee on Education Meeting Plenary, "BIG Jobs and Mathematical Modeling," Washington DC, October 12, 2018.
12. Field of Dreams Conference Connections Plenary, "BIG Math Jobs," November 2017.
13. Seoul National University Professional Development Conference Keynote, "Mathematical Modeling Education," May 2017.
14. Diversity in Mathematics Festival Plenary, "How to get a BIG Math Job," University of Irvine, April 2017.
15. Hari Shankar Memorial Lecture, "Fluid Adventures: Where Mathematics Meets Art," University of Northern Iowa, April 2017.
16. Teaching Contemporary Mathematics Conference Keynote, "Mathematical Modeling in Practice: Workplace Mathematics Your Students Can Recognize," NCSSM, January 2017.
17. Korean International Women's Mathematics Conference Keynotes, "Grandma got STEM," July 3, 2015 and Modeling and Industrial Mathematics Education, July 4, 2015.
18. Moody's Mega Math Challenge Plenary Awards Ceremony, "Mathematical Modeling and Life," April, 2015.
19. AWM Undergraduate Conference Plenary, "Surfactant-driven Thin Liquid Films: Theory and Experiment," University of California at San Diego, May 3, 2014.
20. MAA Section Meeting Plenary, "A Mathematician Meets the Media," Concordia University, Irvine, April 12, 2014.

21. St. Lawrence Valley Undergraduate Mathematics Conference Keynote, "Coordination of robotics," Clarkson University, November 2011.

PRESENTATIONS

Mathematics education

1. Colloquium, Virginia Technical University, October 22, 2019.
2. Colloquium, Virginia Commonwealth University, October 21, 2019.
3. Workshop on Teaching Tools for Teaching Contemporary Mathematics Conference, NCSSM, January 2018.
4. Mathematical Modeling and Equity, Joint Mathematics Meetings, January 2018.
5. SIAM Minisymposium, "Ideas for K-8 outreach," July 2016.
6. National Council of Teachers of Mathematics, San Francisco, "Early grades report from the Guidelines for Assessment and Instruction in Mathematical Modeling Education (GAIMME)," April 2016.
7. Association of Mathematics Teacher Educators, "Math modeling in the Early Grades through School University Partnership," Irvine, January 2016.
8. Panelist, Transforming Post-Secondary Education (TPSE) in Mathematics, Chicago Regional Meeting, "Enhanced Opportunities for Highly Motivated Undergraduates", September 18-20, 2015.
9. Minisymposium speaker, "Modeling Across the Curriculum, Early Grades", SIAM Computational Science and Engineering Meeting, Salt Lake City, March 2015.
10. Panelist, Active Learning Strategies for Mathematics. Joint Mathematics Meetings, Jan 2015.
11. Minisymposium speaker, Modeling Across The Curriculum: The Early Grades, Joint Mathematics Meetings, San Antonio, January 2015.
12. Minisymposium and discussion, Joint Mathematics Meetings, San Antonio, "Modeling Across the Curriculum II," organized with Peter Turner (Clarkson), January 10-13, 2015.
13. Institute of Science and Technology (DGIST), Daegu, Korea, Consulting visit, Industrial STEM education, December 2, 2014.
14. Conference Board of the Mathematical Sciences, Forum on the First Two Years of College Math, Presentation about Harvey Mudd College Mathematics, October 5-7, 2014.
15. SIAM Annual Meeting, Chicago, Mathematical Modeling in the Early Grades, July 2014.
16. Mathematical Modeling in the Early Grades, Joint Mathematics Meeting, Baltimore, January 2014.
17. Probing the inverted classroom: a multi-year multi-department study, Joint Mathematics Meeting, Baltimore, January 2014.
18. Project NexT Panelist, "The Inverted Classroom" with Darryl Yong, July 31, 2013.
19. 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.
20. Teaching Contemporary Mathematics Workshop, "Industry-inspired mathematics problems," NCSSM, Durham, NC, January 2013.
21. GEMS outreach event for 80 students, Pitzer College, Soap and Slope, December 2010.

22. University of Southern California, Women in Mathematics Symposium, Algorithms for coordination and control of aquatic robots, November 2010.
23. Saddle Rock presentations on Math and Writing Core, November 2010.
24. USA Science and Engineering Festival SIAM Booth, Hands-on activities with surface tension, Washington, DC, October 2010.
25. Project NExT Panel, Undergraduate Research, Joint Mathematics Meetings, January 2010.
26. Teaching Contemporary Mathematics Workshops, NCSSM, January 2010.

Applied mathematics

1. Minisymposium, Modern Computational Modeling in Fluids (part of the Workshop Celebrating Diversity), SIAM Computational Science and Engineering Meeting, Salt Lake City, March 2015.
2. Ulsan Institute of Science and Technology (UNIST), Korea, Soft Matter Physics Colloquium Speaker, December 4, 2014.
3. Rochester Institute of Technology, Colloquium on Surfactants and Thin Liquid Films and Women in Science lunch speaker, November 11, 2014.
4. American Physical Society Division of Fluid Dynamics, Minisymposium talk, "Impact of the Equation of State in Models for Surfactant Spreading Experiments," November 21, 2014.
5. Wofford College Mathematics Colloquium, "The Mathematics of Thin Liquid Films: Theory and Experiment" September 2014.
6. SIAM Life Sciences, Charlotte, Cellular, Tissue and Organ Level Biofluid Dynamics Minisymposium, "Surface Tension in Human Lungs, Modeling and Experiments," August 2014.
7. Dynamics at Interfaces Workshop, The Spreading of Surfactants on Thin Liquid Films, Okinawa Institute of Science and Technology (OIST), June 9-14, 2014.
8. Surfactants, Society for Integrative and Comparative Biology, January 2014.
9. Cal Poly Pomona Colloquium, "Surfactant-driven Thin Liquid Films: Theory and Experiments (better breathing through mathematics?)," Pomona, CA, December 4, 2013.
10. Issac Newton Institute, informal research talk, "Surfactants and thin film models," Cambridge, England, August 2013.
11. Society for Integrative and Comparative Biology, "Surface tension in human lungs: modeling and experiments" Austin, TX, January 2013.
12. Science Online, *Why Share Code?*, Raleigh, NC, January 2013.
13. American Physical Society, Division of Fluid Dynamics, Hole-Closing of a Surfactant Layer on a Thin Fluid Film, November 18-20, 2012.
14. SIAM Annual Meeting, "Why Share Code?" July 2012
15. Boeing Distinguished Researcher and Scholar Seminar, Algorithms for coordination and control of aquatic robots, May 2011.
16. Claremont Discourse, Algorithms for coordination and control of aquatic robots, April 2011.
17. Project NExT Panel, "Interdisciplinary research" Joint Mathematics Meetings, San Francisco, January, 2011.
18. Presentation for Math Zoom Summer Students, Coordination of Robotic Vehicles,

August, 2010.

19. Mini-symposium on the Dynamics of Thin Liquid Films, SIAM Annual Meeting, July 2009.
20. Institute for Mathematics and its Applications, IMA Hot Topics Workshop: Higher Order Geometric Evolution Equations, March 2009.
21. Enhancing Diversity in Graduate Education (EDGE) program invited lecture, Pomona College, A shocking discovery: Non-classical waves in thin liquid films, June 2008.
22. Frontiers in Applied and Computational Mathematics, NJIT, Surfactant and gravity-driven thin film flow, May 2008.
23. Cal Poly Pomona, Particle Laden Flow, April 2008.
24. UCLA, Applied Mathematics Seminar, "Gravity-Driven Thin Film Flow with Insoluble Surfactant: Smooth Traveling Waves," May 16, 2007.
25. Bucknell University, "Gravity-driven thin film flow with insoluble surfactant: smooth traveling waves", April 2007.
26. Bucknell University, Student seminar, "Soap and Slope", April 2007.

Mentoring and careers

1. Panelist, Mathematics Associations, Field of Dreams, Nov 15, 2019.
2. Workshop on making a pitch, organized with David Uminsky for the Data Science Leadership Summit, Nov 8, 2019.
3. Career Conversation, Mathematics Olympiad Summer Program, Carnegie Mellon, June 17, 2019.
4. Panelist, TPSE Meeting, Morehouse College, June 10, 2019.
5. AWM-SIAM Career Panel, "Addressing the challenges facing female scientists and mathematicians," July 2016.
6. Panelist, Careers and Opportunities in Industry for Mathematical Scientists, Institute for Mathematics and its Applications (IMA) Monday, April 20–Wednesday, April 22, 2015.
7. Digital Humanities at the Claremont Colleges, "Grandma got STEM," Feb 20, 2015.
8. Panelist, Recommendations for the 21st Century Mathematical Sciences Major, Joint Mathematics Meetings, Jan 2015.
9. SIAM Life Sciences, Charlotte, Lee Segal Panel on Careers in Mathematical Biology, August 2014.
10. Sacred Sistahs Conference for African American Girls, Parent workshop, Harvey Mudd College, April 26, 2014.
11. Mudd on a Mission Campaign, Panelist, April 5, 2014.
12. Claremont Discourse Lecture, Comic Books, Graphic Novels and Manga for Fun, Respect and (if you must) Higher Education, Honnold Library, Claremont, March 2012.
13. Sacred Sistahs SESHAT Conference for African-American Girls, Harvey Mudd College, April 14, 2012.
14. Claremont Long Beach Mathematics Collaborative, Study Skills Workshops, with Talithia Williams, HMC, Spring 2012.
15. Workshop presenter for 1st Annual Sacred Sistahs Conference on Math and Science for African American Girls, "Envisioning a World of New Possibilities," March 2011.
16. Office of Institutional Diversity Panel after the play "Truth Values," February 2011.
17. Workshop presenter, Society for Women Engineers, WEST Conference, March 2009.

Video appearances

1. Moody's Mega Math Challenge Award Ceremony, April 2015.
2. SIAM public awareness video, October 2014.
3. Mathematical Pre-Modeling in the Early Grades, SIAM CS&E Conference, March 2015
4. Academic integrity tutorial by the Claremont Colleges Library, March 2015.

Minisymposia and panels organized

1. Minisymposium, Educating Quantitative Biologists: Modeling, Computing, Data Science and Beyond, SIAM Annual Meeting, July 2016.
2. Minisymposium, Education Programs in Data Science and Data Analytics, SIAM Annual Meeting, July 2016.
3. Minisymposium, Industrial Mathematics Education, SIAM Conference on Computational Scientific and Engineering, Salt Lake City, March 2015.
4. 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)
5. Bobfest Conference in honor of Bob Borrelli, Claremont Colleges, 2012.
6. Workshop on Surfactant Driven Thin Film Flows, organized with M. Chugunova (Toronto) and L. Smolka (Bucknell), Fields Institute, Toronto, Feb 22-24, 2012.
7. SIAM Annual Meeting, Undergraduate Research Poster Session, organized with A. Bernoff (HMC) and C. Topaz (Macalester), July 2008, 2009, 2010.
8. Conference on the Mathematics of Environmental Sustainability and Green Technology, Harvey Mudd College, Jan 29-30, 2010.
9. Project NExT Panel on Undergraduate Research, Joint Mathematics Meetings 2008.
10. Thin Films Mini-symposium, SIAM Southeast Atlantic Section (SEAS) Meeting, organized with M. Shearer (NC State), 2005.

SELECTED PRESS COVERAGE

WVXU Radio interview by Michael Monks, "Calculating one of America's Hottest Careers at MathFest", Cincinnati, August 1, 2019. <https://www.wvxu.org/post/calculating-one-americas-hottest-careers-mathfest#stream/0>

NPR Tell Me More with Michel Martin, How Parents are Leading the Revolution for Girls in Tech, March 18, 2014. <https://www.npr.org/2014/03/18/291133073/how-parents-are-leading-the-revolution-for-girls-in-tech>

Flipped classroom research press coverage

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

1. Harvey Mudd Professors Experimenting with Flipped Classes, ASEE First Bell, Higher Education, November 18, 2014.
2. Harvey Mudd among Colleges Experimenting with 'Flipped' Classes by Jason Song, in the Los Angeles Times, November 16, 2014.
3. HMC Flipped Classroom Study Shows No Difference, by Han Jia, in The Student Life,

October 3, 2014.

4. Flipped Classroom May Help Weaker STEM Students, by Allie Bidwell, U.S. News and World Report, August 5, 2014.
5. 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.
6. Assessing the Flipped Classroom's Impact on Learning, by David Rath, Campus Technology, January 22, 2014.
7. On the Flip Side [or not], by Koren Wetmore, Harvey Mudd College Magazine, Fall/Winter 2013
8. Still in Favor of the Flip, by Carl Straumsheim, Inside Higher Ed, October 30, 2013
9. Quickwire: Flipping Classrooms May Not Make Such Difference, by Hannah Winston, Chronicle of Higher Education, October 22, 2013.
10. 'Flipped Classrooms May Not Have Any Impact on Learning, by Emily Atteberry, USA Today, October 22, 2013.
11. A response to USA Today article on Flipped Classroom research by Darryl Yong, e-literate blog, Posted by Phil Hill on October 22, 2013.
12. Professors Flip Classroom, By Thalia Rossitter, The Student Life, October 4, 2013.

Grandma got STEM press coverage

<https://ggstem.wordpress.com>

1. ABC North Queensland Australia, Morning Show with Paula Tapiolas, Radio Interview of Rachel Levy by David Alex Chambers, April 2013.
2. History of Science Society Newsletter by Jacqueline Wernimont, April 2013.
3. Scope (Stanford Science): "Chipping Away at Stereotypes about Older Women and Science, one story at a time" by Michelle Brandt, April 11, 2013.
4. All-request photos on In Focus, Alan Taylor (see pic #18), The Atlantic, April 12, 2013.
5. "Grandma has Wheels" by Keren Tsurriel, Calcalist (Israel), April 18, 2013.
6. The Hearth (Assisted Living and Aging in California): "Blog celebrates the Grandmothers of Science," Tech, Engineering and Math, March 29, 2013.
7. Canadian Broadcast Company, George Strombolopolous, "Awesome Blog Celebrates Grandmas Who Work(ed) In Science, Tech, Engineering And Math," March 27, 2013.
8. "Amazing Grandma got STEM project fights old lady luddite stereotype," Jason Bittel, slate.com, March 26, 2013.
9. "Grandma, What a Big Brain You Have!" Beryl Benderly Reddit, March 26, 2013.
10. "Grandma got STEM: Les Grands-mères aussi peuvent être fortes en sciences," Cécile Dehesdin, March 25, 2013.
11. "Grandma got STEM challenges the stereotype of Technologically Hapless Old People," Doug Barry, jezebel.com, March 24, 2013.
12. "Grandmothers-who-are-brilliant," Cory Doctorow, boingboing.net, March 23, 2013.