Contact

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Research Interests

Soft condensed matter experiment. *Elasticity and geometry of thin sheets. Memory formation in disordered materials. Capillary and wetting phenomena.*

Education

University of Chicago, Chicago, IL, USA
Ph.D., Physics, December 2013
Thesis: The Approach and Coalescence of Liquid Drops in Air
Advisor: Sidney R. Nagel

St. Olaf College, Northfield, MN, USA
B.A., Physics, *with distinction*, 2007
B.A., Mathematics, *with distinction*, 2007
Salutatorian, Summa Cum Laude

Academic Positions

2022-present	Associate Professor, Syracuse University
2015-2022	Assistant Professor, Syracuse University
May 2019	Total Chair (2 week visiting professorship), ESPCI ParisTech
April 2016	Joliot Chair (4 week visiting professorship), ESPCI ParisTech
2013-2015	Postdoctoral Research Associate, University of Massachusetts, Amherst *Mentors: Narayanan Menon and Thomas P. Russell*

Awards & Fellowships

2023	Physics Department Faculty Teaching Award, Syracuse University
2022	Physics Department Teaching Award (large-lecture class), Syracuse University
2017	Physics Department Teaching Award (large-lecture class), Syracuse University
2017	National Science Foundation CAREER Award
2016	ACS Petroleum Research Fund Doctoral New Investigator Award
2015	Poster Award, Gordon Research Conference on Soft Condensed Matter Physics
2011	Grainger Foundation Fellowship, Physics Department, University of Chicago
2009, 2010	Robert A. Millikan Fellowship for Research and Teaching, University of Chicago
2006	Thomas D. Rossing Physics Scholarship, St. Olaf College
2006	Barry M. Goldwater Scholarship, St. Olaf College
2006	Elected to Phi Beta Kappa, St. Olaf College
2006	Elected to Sigma Pi Sigma, St. Olaf College
2006	Top 500 Scorer, William Lowell Putnam Mathematics Competition
2001	National Council of Teachers of English (NCTE) Writing Award

Students' Awards

2022	Mengfei He: Speaker award, BioInspired Annual Symposium
2022	Pan Dong: COVID Relief Fellowship, Syracuse University
2022	Monica Ripp: All-University Doctoral Prize, Syracuse University
2022	Raj De: Summer Dissertation Fellowship
2022	Raj De: Finalist, Syracuse University 3-Minute Thesis Competition

2020	Monica Ripp: College of Arts & Sciences Graduate Fellowship
2019	Jessica Stelzel: NSF Graduate Research Fellowship
2018	Jordan Barrett: NSF Graduate Research Fellowship
2018	Jordan Barrett: Syracuse University Scholar
2017	Alexander Hartwell: Selected for National REU Symposium

Publications

[25] "Cross-sections of doubly curved sheets as confined elastica." M He†, V Démery, & JD Paulsen. *Proceedings of the National Academy of Sciences USA 120*, e2216786120 (2023). **doi:**10.1073/pnas.2216786120 link

[24] "Exact solutions for the wrinkle patterns of confined elastic shells." I Tobasco†, Y Timounay, D Todorova, GC Leggat, JD Paulsen†, & E Katifori†. *Nature Physics 18,* 1099 (2022). **doi:**10.1038/s41567-022-01672-2 link **Front cover**

[23] "Propagating irreversibility fronts in cyclically sheared suspensions." J Wang, JM Schwarz†, & JD Paulsen†. *Physical Review Research 4*, 013025 (2022). **doi:**10.1103/PhysRevResearch.4.013025 link

[22] "Sculpting liquids with ultrathin shells." Y Timounay, AR Hartwell, M He, DE King, LK Murphy, V Démery†, & JD Paulsen†. *Physical Review Letters 127*, 108002 (2021). **doi:**10.1103/PhysRevLett.127.108002 link

[21] "Multiperiodic orbits from interacting soft spots in cyclically sheared amorphous solids." NC Keim* & JD Paulsen*. *Science Advances 7,* eabg7685 (2021). **doi:**10.1126/sciadv.abg7685 link

[20] "Crumples as a generic stress-focusing instability in confined sheets." Y Timounay†, R De, JL Stelzel, ZS Schrecengost, MM Ripp, & JD Paulsen†. *Physical Review X 10*, 021008 (2020). **doi:**10.1103/PhysRevX.10.021008 link

[19] "Geometry underlies the mechanical stiffening and softening of an indented floating film." MM Ripp, V Démery†, T Zhang†, & JD Paulsen†. *Soft Matter 16,* 4121 (2020). **doi:**10.1039/D0SM00250J link **Inside cover**

[18] "Mesoscale structure of wrinkle patterns and defect-proliferated liquid crystalline phases." O Tovkach, J Chen, MM Ripp, T Zhang†, JD Paulsen†, & B Davidovitch†. *Proceedings of the National Academy of Sciences USA 117,* 3938 (2020). **doi:**10.1073/pnas.1916221117 link

[17] "Memory formation in matter." NC Keim*, JD Paulsen*, Z Zeravcic, S Sastry, & SR Nagel. *Reviews of Modern Physics 91*, 035002 (2019). **doi:**10.1103/RevModPhys.91.035002 link

[16] "Minimal descriptions of cyclic memories." JD Paulsen* & NC Keim*. *Proceedings of the Royal Society A 475,* 20180874 (2019). **doi:**10.1098/rspa.2018.0874 link

[15] "Wrapping liquids, solids, and gases in thin sheets." JD Paulsen. *Annual Review of Condensed Matter Physics vol. 10,* 431 (2019). **doi:**10.1146/annurev-conmatphys-031218-013533 link

[14] "Thickness dependence of the Young's modulus of polymer thin films." J Chang, KB Toga, JD Paulsen, N Menon, & TP Russell. *Macromolecules 51*, 6764 (2018). **doi:**10.1021/acs.macromol.8b00602 link

[13] "Hyperuniformity with no fine tuning in sheared sedimenting suspensions." J Wang, JM Schwarz, & JD Paulsen†. *Nature Communications 9,* 2836 (2018). **doi:**10.1038/s41467-018-05195-4 link

[12] "Wrapping with a splash: High-speed encapsulation with ultrathin sheets." D Kumar, JD Paulsen, TP Russell, & N Menon. *Science 359,* 775 (2018). **doi:**10.1126/science.aao1290 link

[11] "A model for approximately stretched-exponential relaxation with continuously varying stretching exponents." JD Paulsen† & SR Nagel. *Journal of Statistical Physics 167,* 749 (2017).
doi:10.1007/s10955-017-1723-0 link

[10] "Geometry-driven folding of a floating annular sheet." JD Paulsen†, V Démery†, KB Toga, Z Qiu, TP Russell, B Davidovitch, & N Menon. *Physical Review Letters 118,* 048004 (2017).
doi:10.1103/PhysRevLett.118.048004 link

[9] "Curvature-induced stiffness and the spatial variation of wavelength in wrinkled sheets." JD Paulsen*, E Hohlfeld*, H King, J Huang, Z Qiu, TP Russell, N Menon, D Vella, & B Davidovitch. *Proceedings of the National Academy of Sciences USA 113*, 1144 (2016).
doi:10.1073/pnas.1521520113 link

[8] "Optimal wrapping of liquid droplets with ultrathin sheets." JD Paulsen†, V Démery, CD Santangelo, TP Russell, B Davidovitch, & N Menon. *Nature Materials 14,* 1206 (2015).
doi:10.1038/nmat4397 link **Front cover**

[7] "Multiple transient memories in experiments on sheared non-Brownian suspensions." JD Paulsen†, NC Keim, & SR Nagel. *Physical Review Letters 113*, 068301 (2014).
doi:10.1103/PhysRevLett.113.068301 link **PRL Editors' Suggestion**

[6] "Coalescence of bubbles and drops in an outer fluid." JD Paulsen†, R Carmigniani, A Kannan, JC Burton, & SR Nagel. *Nature Communications 5*, 3182 (2014).
doi:10.1038/ncomms4182 link

[5] "Approach and coalescence of liquid drops in air." JD Paulsen. *Physical Review E 88*, 063010 (2013).
doi:10.1103/PhysRevE.88.063010 link

[4] "Multiple transient memories in sheared suspensions: Robustness, structure, and routes to plasticity." NC Keim*†, JD Paulsen*†, & SR Nagel. *Physical Review E 88*, 032306 (2013).
doi:10.1103/PhysRevE.88.032306 link

[3] "The inexorable resistance of inertia determines the initial regime of drop coalescence." JD Paulsen†, JC Burton, SR Nagel, S Appathurai†, MT Harris, & OA Basaran. *Proceedings of the National Academy of Sciences USA 109*, 6857 (2012).
doi:10.1073/pnas.1120775109 link

[2] "Viscous to inertial crossover in liquid drop coalescence." JD Paulsen†, JC Burton, & SR Nagel. *Physical Review Letters 106*, 114501 (2011).
doi:10.1103/PhysRevLett.106.114501 link **PRL Editors' Suggestion**

[1] "Energy-dependent Ps-He momentum-transfer cross section at low energies." JJ Engbrecht†, MJ Erickson, CP Johnson, AJ Kolan, AE Legard, SP Lund, MJ Nyflot, & JD Paulsen *Physical Review A 77*, 012711 (2008).
doi:10.1103/PhysRevA.77.012711 link

* Equal contribution, † Corresponding author(s)

Preprints

[A] "A wrinkled cylindrical shell as a tunable locking material." P Dong, M He, NC Keim†, & JD Paulsen†, *arXiv* 2303.01600 (2023). link

Patents

- US non-provisional patent application for the technology SU#2021-013 **2022**
- US provisional patent (number 63/213,244) for the technology SU#2021-013 – Ultrathin Shells for Sculpting Liquids **2021**

Funding

Pending: "Brittle fracture of interfacial sheets: Understanding the strength of solid films attached to fluid interfaces" New Directions (PI), *ACS Petroleum Research Fund*, $110,000 **2023-2025**

Active: "Understanding stress focusing in thin solids in the absence of tensile loads" Unsolicited Proposal (PI), *National Science Foundation, DMR-CMP,* $475,062 **2023-2026**

Active: "Wet-a-materials: Harnessing elasto-capillarity and structural instability to design novel wet metamaterials", *Seed Grant* (PI)*, Syracuse BioInspired Institute,* $60,000 **2022-2024**

Complete: "Ultrathin sheets on curved liquid surfaces: Stress focusing and interfacial assembly" CAREER Award (PI), *National Science Foundation, DMR-CMP,* $761,314 **2017-2023**

Complete: "Hyperuniform dispersal of non-Brownian particles in viscous liquids" Doctoral New Investigator (PI), *ACS Petroleum Research Fund*, $110,000 **2016-2019**

Press

- "The behavior of thin curved sheets is ironed out." *Physics Today* (2022).
- "The New Math of Wrinkling." *Quanta Magazine* (2022).
- "Researchers have worked out the rules for how some things wrinkle." *New Scientist* (2022).
- "Wrinkles turn to crumples." *Physics 13,* 54 (2020).
- "Capsules made from prefabricated thin films." *Science 359*, 743 (2018).
- "Memory enhancement in colloidal suspensions." *Journal Club for Condensed Matter Physics* (2014).

Highlights have also appeared in Chemical & Engineering News, FYFD, Gizmodo, and phys.org

Invited Conference Presentations

[15] *Sheets shaping liquids and liquids shaping sheets*
"The Physics of Elastic Films: from Biological Membranes to Extreme Mechanics"
Kavli Institute for Theoretical Physics, UC Santa Barbara (Virtual) **2021**

[14] *Crumples as a generic stress-focusing instability in confined sheets*
Minisymposium: "Soft materials: Patterns, instabilities, and controlled deformations"
SIAM Conference on Mathematical Aspects of Materials Science (Virtual) **2021**

[13] *The extreme mechanics of balloons: From interfacial films to inflated membranes and back*
Symposium: "Non-linear response of highly deformable structures"
Society of Engineering Science Annual Technical Meeting, St. Louis, MO **2019**

[12] *The extreme mechanics of balloons: From interfacial films to inflated membranes and back*
Focus session: The extreme mechanics of balloons
APS March Meeting, Boston, MA **2019**

[11] *The wrinkle to crumple transition in confined sheets*
Minisymposium: "Thin structures: Defects, pattern and bifurcations"
SIAM Conference on Mathematical Aspects of Materials Science, Portland, OR **2018**

[10] *Multiple memory formation in a sheared non-Brownian suspension*
"Memory formation in matter"
Kavli Institute for Theoretical Physics, Univ. of California, Santa Barbara **2018**

[9] *The wrinkle to crumple transition in confined sheets*
Summer program: "Packing of continua"
Aspen Center for Physics, Aspen, CO **2017**

[8] *Sheets shaping liquids and liquids shaping sheets*
Invited session: "From isometry to reality: Geometric principles, mechanics, and morphology of thin solid structures", APS March Meeting, New Orleans, LA **2017**

[7] *No instructions necessary: Thin sheets are optimal wrappers of liquid drops*
Keck workshop: "Surface activity driven by material geometry and elasticity"
University of Massachusetts, Amherst, MA **2016**

[6] *Optimal coverage of liquid interfaces with thin polymer sheets*
Gordon Research Conference on Thin Film & Small Scale Mechanical Behavior
Bates College, Lewiston, ME **2016**

[5] *Making do with less: Optimal wrapping of liquid droplets with ultrathin sheets*
67th New England Complex Fluids Workshop
Massachusetts Institute of Technology, Cambridge, MA **2016**

[4] *Multiple memory formation in a sheared granular suspension*
14th Northeast Granular Workshop
University of Massachusetts, Amherst, MA **2016**

[3] *The wavelength of wrinkles in curved tensioned sheets*
KITP program: "Geometry, elasticity, fluctuations, and order in 2D soft matter"
Kavli Institute for Theoretical Physics, Univ. of California, Santa Barbara **2016**

[2] *No instructions necessary: Thin sheets are optimal wrappers of liquid drops*
Short talk selected from posters, Gordon Research Conference on Soft Condensed Matter Physics, Colby-Sawyer College, New London, NH **2015**

[1] *Optimal wrapping of liquids with ultrathin sheets*
"Statistical physics and mechanics of forms and shapes"
Mariehamn, Åland, Finland **2015**

Seminars & Colloquia

[29] *The wrinkle-to-crumple transition in thin elastic solids*
Physics Department Colloquium, University of California, Merced, CA **2022**

[28] *The wrinkle-to-crumple transition in thin elastic solids*
Physics Department Colloquium, University of Vermont, Burlington, VT **2022**

[27] *The wrinkle-to-crumple transition in thin elastic solids*
Webinar Series: Geometry & Packing in Material Structure & Biology (virtual) **2021**

[26] *The wrinkle-to-crumple transition in thin elastic solids*
Physics Department Colloquium, Syracuse University, Syracuse, NY **2021**

[25] *The extreme mechanics of balloons: From interfacial films to inflated membranes and back***,** Complex Systems Seminar, Northwestern University, Evanston, IL (virtual) **2020**

[24] *Memory formation in matter*
Condensed Matter Seminar, University of Massachusetts, Amherst, MA **2019**

[23] *Memory formation in matter*
Condensed and Living Matter Seminar, University of Pennsylvania, PA **2019**

[22] *Memory formation in matter*
Physics Department Colloquium, Emory University, Atlanta, GA **2019**

[21] *Memory formation in matter*
Physics Department Colloquium, Georgia Institute of Technology, Atlanta, GA **2019**

[20] *Wrapping liquids and gases in thin sheets: From interfacial films to balloons and back*
Physics and Astronomy Dept. Colloquium, Tufts University, Medford, MA **2019**

[19] *Wrapping liquids and gases in thin sheets: From interfacial films to balloons and back*
Gulliver Seminar, ESPCI ParisTech **2019**

[18] *Better living through frustration or: Shaping liquid surfaces with thin elastic sheets*
Applied and Interdisciplinary Math Seminar, Univ. of Michigan, Ann Arbor **2018**

[17] *Between a droplet and a soft place: The extreme mechanics of thin sheets*
Biomaterials Seminar, Syracuse University, Syracuse, NY **2018**

[16] *Between a droplet and a soft place: The extreme mechanics of thin sheets*
Physics Department Colloquium, McMaster University, Hamilton, ON **2018**

[15] *Making do with less: Optimal wrapping of liquid droplets with ultrathin sheets*
Physics Department Colloquium, University of Rochester, NY **2016**

[14] *Making do with less: Optimal wrapping of liquid droplets with ultrathin sheets*
DAMPT Fluids Seminar, Cambridge University, Cambridge, UK **2016**

[13] *Noise stabilization of multiple memories in sheared non-Brownian suspensions*
Gulliver Seminar, ESPCI ParisTech **2016**

[12] *The wavelength of wrinkles in elastic sheets on curved topographies*
Séminaire PMMH, ESPCI ParisTech **2016**

[11] *No instructions necessary: Thin sheets are optimal wrappers of liquid drops*
Condensed Matter Seminar, University of Massachusetts, Amherst, MA **2015**

[10] *Covering liquids with thin sheets or: How I learned to stop worrying about mechanics and love geometry,* Physics Department Colloquium, Syracuse University, Syracuse, NY **2015**

[9] *The two-fluid coalescence problem: It's what's inside that counts*
Computations in Science Seminar, University of Chicago, IL **2013**

[8] *Things come together: Ultrafast experiments on liquid drop coalescence*
PREM Seminar, City College of New York, New York, NY **2013**

[7] *Things come together: Experiments on liquid drop coalescence*
Special Seminar, University of Massachusetts, Amherst, MA **2013**

[6] *Transient memories in sheared non-Brownian suspensions*
Special Seminar, Cornell University, Ithaca, NY **2013**

[5] *Transient memories in experiments on sheared non-Brownian suspensions*
Soft Matter Seminar, Georgetown University, Washington, D.C. **2013**

[4] *Things come together: Experiments on liquid drop coalescence*
MRSEC Seminar, Brandeis University, Waltham, MA **2013**

[3] *Ultrafast experiments on liquid drop coalescence*
Physics Department Colloquium, St. Olaf College, Northfield, MN **2013**

[2] *Transient memories in non-equilibrium disordered systems*
Special Seminar, Purdue University, West Lafayette, IN **2012**

[1] *Experimental analysis of liquid drop coalescence*
Computations in Science Seminar, University of Chicago, IL **2011**

Contributed Talks

[15] *Propagating irreversibility fronts in cyclically-sheared suspensions*
APS March Meeting, Las Vegas, NV **2023**

[14] *Minimal descriptions of cyclic memories*
Virtual mini-workshop: Pathways, Sequence and Memory **2020**

[13] *Geometrically-frustrated wrinkle patterns 1: Defects and mesoscale structure*
APS March Meeting (via DSOFT Virtual Meeting) **2020**

[12] *Sculpting liquid surfaces with ultrathin shells*
Society of Engineering Science Annual Technical Meeting, St. Louis, MO **2019**

[11] *Sheets shaping liquids and liquids shaping sheets*
Society of Engineering Science Annual Technical Meeting, College Park, MD **2016**

[10] *Geometry-driven folding transitions in floating thin films*
APS March Meeting, Baltimore, MD **2016**

[9] *Capillarity-driven folding of a thin floating annular film*
APS Division of Fluid Dynamics Meeting, Boston, MA **2015**

[8] *Thin sheets achieve optimal wrapping of liquids*
APS March Meeting, San Antonio, TX **2015**

[7] *Wrapping a liquid drop with a thin elastic sheet*
APS Division of Fluid Dynamics Meeting, San Francisco, CA **2014**

[6] *Stretched exponential relaxation in sheared non-Brownian suspensions*
APS March Meeting, Denver, CO **2014**

[5] *Coalescence of two drops surrounded by an outer fluid*
APS March Meeting, Baltimore, MD **2013**

[4] *Transient memories in non-equilibrium disordered systems*
APS March Meeting, Boston, MA **2012**

[3] *Viscous to inertial crossover in liquid drop coalescence*
APS Division of Fluid Dynamics Meeting, Long Beach, CA **2010**

[2] *Coalescence of low-viscosity liquids*
APS Division of Fluid Dynamics Meeting, Minneapolis, MN **2009**

[1] *Coalescence and pinch-off in viscous liquids*
APS March Meeting, Pittsburgh, PA **2009**

Conference Talks by Students

[22] *Interplay of gross and fine morphologies of unstretchable balloons*
M He, Invited Talk, APS March Meeting, Las Vegas, NV **2023**

[21] *A wrinkled cylindrical shell as a tunable locking material*
P Dong, APS March Meeting, Las Vegas, NV **2023**

[20] *Wet-a-materials: designing hairy surfaces for droplet manipulation*
M He, APS March Meeting, Las Vegas, NV **2023**

[19] *Expand into collapse: Gross and fine structures of an inflated balloon*
M He, APS March Meeting, Chicago, IL **2022**

[18] *Twisting a thin cylindrical film: From wrinkles to kinematic constraints*
P Dong, APS March Meeting, Chicago, IL **2022**

[17] *Curvature driven propulsion of floating films: Part 2*
R De, APS Division of Fluid Dynamics Meeting, Pheonix, AZ **2021**

[16] *Curvature driven propulsion of floating films: Part 1*
MM Ripp, APS Division of Fluid Dynamics Meeting, Pheonix, AZ **2021**

[15] *Memory and aging in the cyclic crumpling of a film*
P Dong, APS March Meeting (virtual) **2021**

[14] *Curvature-driven propulsion of floating films*
MM Ripp, APS March Meeting (virtual) **2021**

[13] *Curvature-driven propulsion of floating films: Part 2*
Z Schrecengost, APS March Meeting (via DSOFT Virtual Meeting) **2020**

[12] *Curvature-driven propulsion of floating films: Part 1*
MM Ripp, APS March Meeting (via DSOFT Virtual Meeting) **2020**

[11] *Geometric stiffening and softening of an indented floating thin film*
MM Ripp, SES Annual Technical Meeting, St. Louis, MO **2019**

[10] *A geometric theory of wrinkling for confined shells: Part 1*
Y Timounay, APS March Meeting, Boston, MA **2019**

[9] *Geometric stiffening and softening of an indented floating thin film*
MM Ripp, APS March Meeting, Boston, MA **2019**

[8] *Stress focusing in inflated membranes: Threshold and morphology*
R De, APS March Meeting, Boston, MA **2019**

[7] *Self-organized compaction fronts in cyclically-sheared sinking grains*
J Wang, APS March Meeting, Boston, MA **2019**

[6] *The wrinkle to crumple transition in thin films on curved surfaces*
Y Timounay, Solvay Workshop, Université Libre de Bruxelles, Brussels, Belgium **2018**

[5] *Hyperuniformity with no fine tuning in sheared sedimenting suspensions*
J Wang, APS March Meeting, Los Angeles, CA **2018**

[4] *Buckling of an ultrathin shell on a flat liquid surface*
AR Hartwell, APS March Meeting, Los Angeles, CA **2018**

[3] *Indenting a thin floating film: Force and first-fold formation*
MM Ripp, APS Division of Fluid Dynamics Meeting, Denver, CO **2017**

[2] *Wrinkle-to-crumple transition in thin films on curved surfaces*
Y Timounay, APS Division of Fluid Dynamics Meeting, Denver, CO **2017**

[1] *Homogenizing a viscous suspension without fine tuning*
J Wang, APS March Meeting, New Orleans, LA **2017**

Outreach Talks

[15] *From patterns to principles: Wrinkled sheets and what they tell us*
Talk for regional high school physics teachers
Physics Alliance of Central New York, Syracuse University, Syracuse, NY **2022**

[14] *From patterns to principles: Wrinkled sheets and what they tell us*
The Bio-Art Mixer #11, Syracuse, NY **2020**

[13] *Memory formation in matter*
Seminar, Society of Physics Students, Syracuse University, Syracuse, NY **2019**

[12] *Between a droplet and a soft place: The extreme mechanics of thin sheets*
SUPA Seminar for high school physics teachers, Syracuse, NY **2017**

[11] *Between a droplet and a soft place: The extreme mechanics of thin sheets*
SUPA Seminar for high school physics teachers, New York, NY **2017**

[10] *The extreme mechanics of thin sheets*
Undergraduate Colloquium (one of four speakers), Syracuse University, Syracuse, NY **2017**

[9] *Buckling under pressure: Draping & wrapping with thin elastic sheets*
Talk for regional high school physics teachers
Physics Alliance of Central New York, Syracuse University, Syracuse, NY **2017**

[8] *Tailoring non-Brownian suspensions with shear*
NSF IGERT Graduate Student Social Series, Syracuse University, Syracuse, NY **2017**

[7] *Wrinkling on a curve*
Mechanical & Aerospace Engineering Graduate Seminar, Syracuse University, NY **2017**

[6] *Think Fast! The rapid motions of everyday liquids*
Café Junior Scientifique, Museum of Science and Technology, Syracuse, NY **2016**

[5] *Self-organization of non-Brownian spheres or: Writing memories in sludge*
Talk, Undergraduate Research Day, Syracuse University, Syracuse, NY **2016**

[4] *Buckling under pressure: Draping & wrapping with thin elastic sheets*
Talk, Undergraduate Research Day, Syracuse University, Syracuse, NY **2015**

[3] *What the heck is soft condensed matter?*
Public outreach talk, Lunch & Learn series, Centro Media Inc., Chicago, IL **2013**

[2] *Transient memories in sheared non-Brownian suspensions*
Guest lecture, PHYS 399: Senior Seminar, St. Olaf College, Northfield, MN **2013**

[1] *Transient memories in non-equilibrium disordered systems*
Seminar, Society of Physics Students, University of Chicago, IL **2012**

Education & Outreach

Syracuse University, Syracuse, NY, USA

- Director of Undergraduate Studies, Department of Physics 2022-present
- Instructor:

Semester	*Course*	*Enrollment*
Spring `23	PHY731: Thermodynamics & Statistical Mechanics	18
Fall `22	PHY225: Experiencing Physics I	22
Spring `22	PHY731: Thermodynamics & Statistical Mechanics	18
Fall `21	PHY212: General Physics II	215
Spring `21	PHY731: Thermodynamics & Statistical Mechanics	19
Spring `20	PHY212: General Physics II	138

Fall `19	PHY531: Thermodynamics & Statistical Mechanics	9
Fall `18	PHY531: Thermodynamics & Statistical Mechanics	5
Fall `18	CAS101: First Year Forum	16
Spring `18	PHY212: General Physics II	158
Spring `17	PHY212: General Physics II	162
Fall `16	PHY531: Thermodynamics & Statistical Mechanics	13
Fall `15	PHY531: Thermodynamics & Statistical Mechanics	10

- Faculty Advisor, Society of Physics Students **2016-2020**
  Distinguished Chapter Award: `16-`17, `17-`18, and `19-`20
  Outstanding Chapter Award (given to <15% of all SPS chapters): `18-`19
- Research Internships for high school teachers (see *Mentees*, below) **4 times since 2017**
- Talks for students, teachers, and the general public (see *Outreach Talks*, above)

University of Chicago, Chicago, IL, USA

- Director of Education, NSF Research Experiences for Undergraduates **2009-2011**
- "Physics with a BANG!": *Annual physics demo show and open house for community; high-speed camera operator, lab tour guide, demo operator* **2009-2012**
- After School Science Club, Andrew Carnegie Elementary School **2008-2010**

Professional Service

Conference Organization:

- Invited Session co-organizer & Chair, APS March Meeting
  Memory formation in matter: Using collective phenomena to recall the past **upcoming, 2024**
- Focus Session co-organizer & Chair, APS March Meeting
  Infomatter: Discovery and design of memory formation and information in matter **2023**
- Workshop co-organizer, Banff International Research Station, Okanagan, BC
  Equilibrium and non-equilibrium pattern formation in soft matter: From elastic solids to complex fluids **2022**
- Online seminar series co-organizer
  Geometry & packing in material structure & biology (geompack.com) **2021-present**
- Minisymposium co-organizer, SIAM MS21, Bilbao, Spain
  Soft materials: Patterns, instabilities, and controlled deformations **2021**
- Focus Session co-organizer & Chair, APS March Meeting
  Memory formation in matter: Encoding, reading, and design **2021**
- Invited Session Organizer & Chair, APS March Meeting (via DSOFT Virtual Meeting)
  Memory formation in matter: From reading the past to designing the future **2020**
- GSOFT Poster Judge, APS March Meeting, New Orleans, LA **2017**
- Co-organizer, ICAM Conference, Syracuse University, Syracuse, NY
  Active & smart matter: A new frontier for science and engineering **June 20-23, 2016**

Journal Reviewer:

Applied Physics Letters, Chemical Engineering Science, Colloids and Surfaces A, European Journal of Physics E, Macromolecules, Nature Communications, Physics of Fluids, Physical Review E, Physical Review Fluids, Physical Review Letters, Proceedings of the National Academy of Sciences, Review of Scientific Instruments, Science Advances, Soft Matter

Proposal Reviewer:

ACS Petroleum Research Fund
Deutsche Forschungsgemeinschaft (German Research Foundation)
Israel Science Foundation
National Science Foundation (ENG/CBET-PMP and MPS/DMR-CMP)

Mentees

High-School Students:

Emily Vieru	Intern	Summer 2022
Cayla Dedrick	Intern	Summer 2016

Undergraduates:

Vanessa Hawkins	REU student	Summer 2023
Eadin Block	Intern	Spring 2023 - present
Marko Suchy	Intern	Summer 2022
Marianna Marquardt	REU student	Summer 2022
Robert Keane	REU student	Summer 2019
Jessica Stelzel	REU student	Summer 2018
Alexander Hartwell	REU student	Summer 2017
Jordan Barrett	Intern	Spring 2017 - Fall 2018
Lindsay Murphy	Intern	Fall 2016 - Spring 2017
Graham Leggat	Intern	Summer 2016
Anna Martin	REU student	Summer 2016

Post-Baccalaureate Students:

Seif Hejazine	Intern	Summer 2020 - Summer 2022

Graduate Research Assistants:

Asif Iqbal	Research assistant	Summer 2023 - present
Pan Dong	Research assistant	Summer 2019 - present
Zachariah Schrecengost	Research assistant	Summer 2018 - Summer 2020, Fall 2022 - present
Raj De†	Research assistant	Fall 2017 - Fall 2022
Jikai Wang†	Research assistant	Spring 2016 - Summer 2021
Monica Ripp†	Research assistant	Spring 2016 - Fall 2021

† *Defended PhD thesis*

Graduate Students conducting Independent Studies:

Vidyesh Anisetti	Intern	Spring 2023
Samay Narasimhamurthy	Intern	Fall 2022
Patrick Adams	Intern	Fall 2021
Nuzhat Faiza Nufa	Intern	Fall 2021
Elizabeth Lawson-Keister	Intern	Fall 2018 - Spring 2019
D. Eric King	Intern	Fall 2016 - Spring 2017
Arthur Hernandez	Intern	Summer 2016 - Spring 2017

Postdoctoral Researchers:

Mengfei He	Research associate	Fall 2019 - Summer 2023
Yousra Timounay	Research associate	Spring 2017 - Summer 2019

High-School Teachers:

Anne Huntress	South Lewis Central HS	Summer 2022
Joshua Buchman	Fayetteville-Manlius HS	Summer 2019
Thomas Procopio	Nottingham HS	Summer 2018
Elise Jutzeler	Jamesville-Dewitt HS	Summer 2017