

Curriculum Vitæ

Steve Pressé

Website: statphysbio.physics.asu.edu
spresse@asu.com

Positions

- May 2021
-present **Arizona State University**
Professor – Dept. of Physics and School of Molecular Sciences
[Affiliate member - ASU Global Security Initiative]
- Jan. 2017
-Apr. 2021 **Arizona State University**
Associate Professor – Dept. of Physics and School of Molecular Sciences
[Affiliate member - ASU Global Security Initiative]
- Jan. 2013
-Dec. 2016 **Indiana Univ. - Purdue Univ. Indianapolis**
Assistant Professor of Biophysics – Dept. of Physics
[Adjunct – Cell & Integrative Physio. (IU School Med.) and Chemistry]

Education

- 2008
-2012 **University of California San Francisco, San Francisco CA**
Postdoctoral fellow, Biophysics (K.A. Dill group)
- 2003
-2008 **Massachusetts Institute of Technology, Cambridge MA**
Ph.D., Chemical Physics (R.J. Silbey group);
Thesis title: Role of fluctuations and defects in select condensed matter problems
- 2000
-2003 **McGill University, Montréal QC**
B.Sc., Honors Chemistry, minor German Language

Publications (* denotes corresponding author, † denotes undergraduate author)

In review

- I. Sgouralis*, **S. Pressé***, textbook, “Data Modeling for the Sciences: applications, basics, computations”, Cambridge Univ. Press (available on Amazon summer 2023)
- M. Fazel, S. Jazani, L. Scipioni, A. Vallmitjana, S. Zhu, E. Gratton, M.A. Digman, **S. Pressé***, “Building fluorescence lifetime maps photon-by-photon by leveraging spatial correlations”, in review at ACS Photonics (2023)
- M. Fazel, K.S. Grussmayer, B. Ferdman, A. Radenovic, Y. Schechtman, J. Enderlein, **S. Pressé***, “Fluorescence Microscopy: a statistical-optics perspective”, in review at Rev. Mod. Phys. (2023)
- I. Sgouralis, W.Q. Xu, A.P. Jalihal, Z. Kilic, Nils G. Walter, **S. Pressé***, “BNP-Track: A framework for superresolved tracking”, in review at Nat. Meth. (2023)
- A. Saurabh, W.Q. Xu, **S. Pressé***, “Concerns on the statistical foundation of a recent single molecule

FRET competition”, in review at Nat. Comm. (2023)

Published and accepted (in rank)

Z. Kilic, M. Schweiger, **S. Pressé***, “Hybrid Sampling for Multiscale Challenges in Gene Network Quantification”, accepted PLoS Comp. Bio. (2023)

W.Q. Xu, J. Shepard Bryan IV, Z. Kilic, **S. Pressé***, “Two state swimming: strategy and survival of a model bacterial predator in response to environmental cues”, **Biophys. J.**, 122, 1 (2023)

J. Lee, K. Cotter†, I. Elsadek†, M. Comstock*, **S. Pressé***, “Few-body hydrodynamic interactions probed by optical trap pulling experiments”, **J. Chem. Phys.**, 159, 024201 (2023)

Y. Luo, J. Chang, D. Yang, J. Shepard Bryan IV, M. MacIsaac, **S. Pressé**, W. Wong*, “Resolving molecular heterogeneity with single-molecule centrifugation”, **JACS**, 145, 3276 (2023)

P. Pessoa, **S. Pressé***, “How many submissions does it take to discover friendly suggested reviewers?”, **PLoS ONE**, 18, e0284212(2023)

M. Fazel, A. Vallmitjana, L. Scipioni, E. Gratton, M.A. Digman, **S. Pressé***, “Fluorescence Lifetime: Beating the IRF and interpulse window”, **Biophys. J.**, 122, 672 (2023)

Z. Kilic, M. Schweiger, C. Moyer, D.P. Shepherd*, **S. Pressé***, “Gene expression model inference from snapshot RNA data using Bayesian non-parametrics”, **Nat. Comp Sc.**, 3, 174 (2023)

Featured in: Nature Computational Science News and Views

A. Saurabh, M. Safar†, I. Sgouralis, M. Fazel, **S. Pressé***, “Single Photon smFRET. I. theory and conceptual basis”, **Biophys. Rep.**, 3, 100089 (2023)

Selected as: Biophysical Report Highlights, **Featured in:** Biophysics.org Blog, Cell Press Highlights

A. Saurabh, M. Safar†, M. Fazel, I. Sgouralis, **S. Pressé***, “Single photon smFRET. II. application to continuous illumination”, **Biophys. Rep.**, 3, 100087 (2023)

M. Safar†, A. Saurabh, B. Sarkar, M. Fazel, K. Ishii, I. Sgouralis, T. Tahara, **S. Pressé***, “Single photon smFRET. III. application to pulsed illumination”, **Biophys. Rep.**, 2, 100088 (2023)

J. Shepard Bryan IV, **S. Pressé***, “Learning Continuous Potentials from smFRET”, **Biophys. J.**, in press (2022)

S. Shiekh, A. Jack, A. Saurabh, G. Mustafa, S. Kodikara, P. Gyawali, M.E. Hoque, **S. Pressé**, A. Yildiz*, H. Balci*, “Shelterin Reduces the Accessibility of Telomeric Overhangs”, **Nucl. Acid Res.**, 50, 12885 (2022)

P. Pessoa, B. Arderucio Costa, **S. Pressé***, “Revisiting Claims in ‘Black Hole Entropy: A Closer Look’ ”, **arXiv**, arXiv:2210.00324 (2022)

A. Saurabh, S. Niekamp, I. Sgouralis, **S. Pressé***, “Modeling non-additive effects in neighboring chemically identical fluorophores”, **J. Phys. Chem. B**, 126, 4216 (2022)

S. Jazani, W.Q. Xu, I. Sgouralis, D.P. Shepherd, **S. Pressé***, “A computational proposal for tracking multiple molecules in a multi-focus confocal”, **ACS Photonics**, 9, 2489 (2022)

J. Shepard Bryan IV, O. Basak, **J. Bechhoefer***, **S. Pressé***, “Inferring potential landscapes from noisy trajectories of particles within an optical feedback trap”, **iScience**, 25, 104731 (2022)

M. Fazel, S. Jazani, L. Scipioni, A. Vallmitjana, E. Gratton, M.A. Digman, **S. Pressé***, “High resolution fluorescence lifetime maps from minimal photon counts”, **ACS Photonics**, 9, 1015 (2022)

J. Shepard Bryan IV, I. Sgouralis, **S. Pressé***, “Diffraction-limited molecular cluster quantification with Bayesian nonparametrics”, **Nat. Comp. Sc.**, 2, 102 (2022)

Featured in: Nature Computational Science News and Views

Z. Kilic, I. Sgouralis, **S. Pressé***, “Residence time analysis of RNA polymerase transcription dynamics: a Bayesian sticky HMM approach”, **Biophys. J.**, 120, 1665 (2021)

Z. Kilic, I. Sgouralis, W. Heo, K. Ishii, T. Tahara, **S. Pressé***, “Extraction of rapid kinetics from smFRET measurements using integrative detectors”, **Cell Reports: Physical Science**, 2, 100409 (2021)

Z. Kilic, I. Sgouralis, **S. Pressé***, “Generalizing HMMs to continuous time for fast kinetics: Hidden Markov Jump Processes”, **Biophys. J.**, 120, 409 (2021)

S. Pressé*, “A thermodynamic perspective on enhanced enzyme diffusion”, Commentary, **Proc. Natl. Acad. Sc.**, 2022207117 (2020)

M. Tavakoli, S. Jazani, I. Sgouralis, H. Wooseok, K. Ishii, T. Tahara, **S. Pressé***, “Direct photon-by-photon analysis of time-resolved pulsed excitation data using Bayesian nonparametrics”, **Cell Reports: Physical Science**, 1, 100234 (2020)

S. L. Seyler, **S. Pressé***, “Surmounting potential barriers: Hydrodynamic memory hedges against fluctuating sources of energy”, **J. Chem. Phys.**, 153, 041102 (2020)

Selected as: Rapid Communications

T. Modi, S.B. Ozkan, **S. Pressé***, “Information propagation in time through allosteric signaling” **Phys. Rev. Res.**, 2, 023367 (2020)

J. Shepard Bryan IV, I. Sgouralis, **S. Pressé***, “Inferring effective forces for Langevin dynamics using Gaussian processes” **J. Chem. Phys.**, 152, 124106 (2020)

M.Tavakoli, I. Sgouralis, O.M. Shafraz, S. Sivasankar, B. Donaphon, M. Levitus, **S. Pressé***, “Pitching single focus confocal data analysis one photon at a time with Bayesian nonparametrics” **Phys. Rev. X**, 10, 011021 (2020)

S. L. Seyler, **S. Pressé***, “Long-time Persistence of Hydrodynamic Memory Boosts Microparticle Transport” **Phys. Rev. Research**, 1, 032003(R) (2019)

Selected as: Rapid Communications

S. Jazani, I. Sgouralis, O.M. Shafraz, M. Levitus, S. Sivasankar, **S. Pressé***, “An Alternative Framework for Fluorescence Correlation Spectroscopy” **Nat. Comm.**, 10, 3662 (2019)

Featured in: Phys.org, Science Daily, Nanowerk, Photonics.com, EurekaAlert!

J. Lee*, S. Seyler, **S. Pressé**, “Hydrodynamic interaction facilitates the unsteady transport of two neighboring vesicles” **J. Chem. Phys.**, 156, 094108 (2019)

M. Tavakoli, K. Tsekouras, R. Day, K.W. Dunn, **S. Pressé***, “Quantitative Kinetic Models from Intravital Microcopy: A Case Study Using Hepatic Transport” **J. Phys. Chem. B**, 123, 7302 (2019)

S. Jazani, I. Sgouralis, **S. Pressé***, “A method for single molecule tracking using a conventional single-focus confocal setup” **J. Chem. Phys.**, 150, 114108 (2019)

Selected as: J. Chem. Phys. Editor Highlight

V. Prakash, K. Tsekouras, M. Venkatachalapathy, L. Heineke, **S. Pressé**, N.G. Walter*, Y. Krishnan* , “Quantitative maps of endosomal DNA processing by single molecule counting” **Angewandte Chemie**, 58, 3073 (2019)

I. Sgouralis, S. Madaan, F. Djutanta, R. Kha†, R. Hariadi, **S. Pressé***, “A Bayesian Nonparametric Approach to Single Molecule Förster Resonance Energy Transfer” **J. Phys. Chem. B**, 123, 675 (2019)

G. Javens†, H. Jashnsaz, **S. Pressé***, “From the volcano effect to banding: a minimal model for bacterial behavioral transitions near chemoattractant sources” **Phys. Bio.**, 15, 046002 (2018)

I. Sgouralis, M. Whitmore, L. Lapidus, M. Comstock, **S. Pressé***, “Single Molecule Force Spectroscopy at High Data Acquisition: A Bayesian Nonparametric Analysis” **J. Chem. Phys.**, 148, 123320 (2018)

P. Dixit, J. Wagoner, C. Weistuch, **S. Pressé**, K. Ghosh, and K. Dill*, “Perspective: Maximum Caliber is a general variational principle for dynamical systems” **J. Chem. Phys.**, 148, 010901 (2018)

C. Weistuch†, **S. Pressé***, “Spatiotemporal organization of catalysts driven by enhanced diffusion” **J. Phys. Chem. B**, 122, 5286 (2018)

H. Jashnsaz, G. Anderson, **S. Pressé***, “Statistical signatures of a targeted search by bacteria” **Phys. Bio.**, 14, 065002 (2017)

I. Sgouralis, **S. Pressé***, “ICON: an adaptation of infinite HMMs for time traces with drift”, **Biophys. J.**, 112, 2117 (2017)

I. Sgouralis, **S. Pressé***, “An introduction to infinite HMMs for single molecule data analysis”, **Biophys. J.**, 112, 2021 (2017)

M. Tavakoli, J.N. Taylor, C.-B. Li, T. Komatsuzaki, **S. Pressé***, “Single molecule data analysis: An introduction”, **Adv. Chem. Phys.**, 162, 205 (2017)

H. Jashnsaz, M. Al Jaboori†, C. Weistuch†, N. Miller†, T. Nguyen†, V. Meyerhoff†, B. McCoy†, S. Perkins†, R. Wallgren†, B. Ray, K. Tsekouras, G. Anderson*, **S. Pressé***, “Hydrodynamic Hunters”, **Biophys. J.**, 112, 1282 (2017)

Selected as: Biophys. J. Research Highlight; **Selected as:** EurekaAlert!, Bild.de, Sueddeutsche.de, Sciencedirect.com, Welt.de, Zeit.de, Spiegel.de, SciShow (260k+ views) and 37+ additional sites.

A. Lee, K. Tsekouras, C. Calderon, C. Bustamante, **S. Pressé***, “Unraveling the thousand word picture: An Introduction to super-resolution data analysis”, **Chem. Rev.**, 117, 7276 (2017)

K. Tsekouras, T.C. Custer, N.G. Walter, **S. Pressé***, “A novel method to accurately locate and count large numbers of steps by photobleaching”, **MBoC**, 2, 3601 (2016)

K. Tsekouras, C. Riedel, R. Gabizon, S. Marqusee, **S. Pressé***, **C. Bustamante**, “Comment on “Enhanced diffusion of enzymes that catalyze exothermic reactions” by R. Golestanian”, **arXiv preprint arXiv:1608.05433**, Unpublished (2016)

G. Rollins, J.Y. Shin, C. Bustamante, **S. Pressé***, “Stochastic approach to the molecular counting problem in super-resolution microscopy”, **Proc. Natl. Acad. Sc.** (Direct Submission), 112, E110 (2015)

Featured in: EurekaAlert!, PNAS Research Highlight, IUPUI SoS Website

C. Riedel, R. Gabizon, C.A.M. Wilson, K. Hamadani, K. Tsekouras, S. Marqusee, **S. Pressé***, C. Bustamante*, “The heat released during catalytic turnover enhances the diffusion of an enzyme”, **Nature**, 517, 227 (2015)

Selected as: Nature News and Views, C&EN Highlights; **Featured in:** Phys.org, IUPUI SoS Website

H. Jashnsaz, T. Nguyen†, H. Petrache, **S. Pressé***, “Inferring models of bacterial dynamics toward point sources”, **PLoS ONE**, 10, e0140428 (2015)

S. Pressé*, “A data-driven alternative to the fractional Fokker-Planck equation”, **J. Stat. Mech.: Th. and Expmt.**, P07009 (2015)

K. Tsekouras, A. Siegel, R. Day, **S. Pressé***, “Inferring diffusion dynamics from FCS in heterogeneous nuclear environments”, **Biophys. J.**, 109, 7 (2015)

S. Pressé*, K. Ghosh, J. Lee, K. Dill, “Reply to C. Tsallis’ ‘Conceptual inadequacy of the Shore and Johnson axioms for wide classes of complex systems’ ”, **entropy**, 17, 5043 (2015)

S. Pressé*, “Nonadditive entropy maximization is incompatible with Bayesian updating”, **Phys. Rev. E.**, 90, 052149 (2014)

S. Pressé*, J. Peterson, J. Lee, P. Elms, J.L. MacCallum, S. Marqusee, C. Bustamante, K. Dill, “Single molecule conformational memory extraction: P5ab RNA hairpin”, **J. Phys. Chem. B**, 118, 6597 (2014)

S. Pressé*, K. Ghosh, J. Lee, K. Dill, “Nonadditive entropies yield probability distributions with biases not warranted by the data”, **Phys. Rev. Lett.**, 111, 180604 (2013)

Featured in: Science Daily, IUPUI SoS Website

S. Pressé*, K. Ghosh, J. Lee, K. Dill, “Principles of maximum entropy and maximum caliber in statistical physics”, **Rev. Mod. Phys.**, 85, 1115 (2013)

M. Sen, R.A. Maillard, K. Nyquist, P. Rodriguez-Aliaga, **S. Pressé***, A. Martin*, C. Bustamante*, “The ClpXP protease functions as a motor with constant ‘rpm’ but different ‘gears’ ”, **Cell**, 115, 636 (2013)

Featured in: IUPUI SoS Website

S. Pressé*, J. Lee, K. Dill, “Extracting conformational memory from single-molecule kinetic data”, **J. Phys. Chem. B**, 117, 495 (2013)

Prior publications

J. Lee*, **S. Pressé***, “Microcanonical origin of the maximum entropy principle for open systems”, **Phys. Rev. E**, 86, 041126 (2012)

J. Lee*, **S. Pressé***, “A derivation of the master equation from path entropy maximization”, **J. Chem. Phys.**, 137, 074103 (2012)

G.J. Peterson*, **S. Pressé**, K. Peterson, K.A. Dill, “Simulated evolution of protein-protein interaction networks with realistic topology”, **PLoS ONE**, 7, e39052 (2012)

H. Ge*, **S. Pressé**, K. Ghosh, K.A. Dill, “Markov processes follow from the principle of maximum caliber”, **J. Chem. Phys.**, 136, 064108 (2012)

Selected as: J. Chem. Phys. Research Highlight.

S. Pressé*, K. Ghosh, K.A. Dill, “Modeling stochastic dynamics in biochemical systems with feedback using maximum caliber”, **J. Phys. Chem. B**, 115, 6202 (2011)

S. Pressé, K. Ghosh, R. Phillips*, K.A. Dill*, “Dynamical fluctuations in biochemical reactions and cycles”, **Phys. Rev. E**, 82, 031905 (2010)

G. J. Peterson, **S. Pressé**, K.A. Dill*, “Nonuniversal power law scaling in the probability distribution of scientific citations”, **Proc. Natl. Acad. Sc.**, 107, 16023 (2010)

S. Pressé, R.J. Silbey*, “Radiating dipoles near curved interfaces”, **Phys. Rev. A**, 77, 043402 (2008)

S. Pressé, R.J. Silbey*, “Memory effects on the convergence properties of the Jarzynski equality”, **Phys. Rev. E**, 74, 061105 (2006)

J.M. Hodgkiss, N.H. Damrauer, **S. Pressé**, J. Rosenthal, D.G. Nocera*, “Electron transfer driven by proton fluctuations in a hydrogen-bonded donor-acceptor assembly”, **J. Phys. Chem. B**, 110, 18853 (2006)

S. Pressé, R.J. Silbey*, “Anomalous temperature-isotope dependence in proton-coupled electron transfer”, **J. Chem. Phys.**, 124, 164504 (2006)

S. Pressé, R.J. Silbey*, “Ordering of limits in the Jarzynski equality”, **J. Chem. Phys.**, 124, 054117 (2006)

Scholarships, Fellowships, Grants and Awards

2023 – NSF, PHY– MPI grant (Pressé 85% effort)
‘Tuning and assessing bacterial predation efficiency in complex environments’
(\$ 760,000 including indirect)

- 2023 – **NIH, NIGMS R35 – Single PI grant**
‘Toward high spatiotemporal resolution models of single molecules for in vivo applications’
(\$ 2,800,000 including indirect)
- 2021 – **NIH BRAIN Initiative Cell Census Network R01 – MPI grant (Pressé 30% effort)**
Pressé one of 3 core PIs
‘Scalable 3D molecular imaging and data analysis for cell census generation’
(\$ 2,230,000 including indirect)
- 2019 – **NIH, NIGMS R01– Single PI grant**
‘Theoretical models of single molecule dynamics from minimal photon numbers’
(\$ 1,200,000 including indirect)
- 2019 – **NIH, NIGMS R01– Single PI grant**
‘A Bayesian nonparametric approach to superresolved tracking of multiple molecules’
(\$ 1,500,000 including indirect)
- 2017 – **Moore Foundation/Research Corporation – 3 Co-PI grant**
‘Follow the Leader: Forecasting collective cancer dynamics’
(\$ 168,750 including 12.5% indirect, split equally among 3 Co-PI’s)
- 2016 – **NSF CAREER – Single PI grant**
‘NSF CAREER: Data-Driven Models for Biological Dynamics’
(\$ 1,000,000 including indirect)
- **Army Research Office, Mechanical Sciences Division – Single PI grant**
‘Multi-Dimensional and Dissipative Dynamical Systems: Maximum Entropy as a Principle for Modeling Dynamics and Emergent Phenomena in Complex Systems’
(\$ 360,000 including indirect)
- 2015 – **Research Corporation Scialog Fellow for “Molecules Come to Life”**
- **GSIRF Grant ‘Advancing photobleaching as a versatile single molecule counting tool’**
(\$ 56,000 direct), PI: Steve Pressé, Co-PI: Ken Dunn
- **IUCRG Grant ‘Using quantitative in vivo microscopy to build predictive models of drug-induced liver injury’**
(\$ 50,000 direct), Co-PI: Steve Pressé, Richard Day, Ken Dunn
- **Purdue Research Foundation Summer Grant (\$ 9,000 + fringe)**
- 2014 – **NSF, MCB/PHY – Single PI grant**
‘Determining in vivo protein complex stoichiometry from superresolution microscopy’
(\$ 470,350 including indirect)
- **Purdue Research Foundation Research Grant (\$ 18,000 + fringe)**
- 2013 – **Burroughs-Wellcome Travel Grant (\$ 12,000 total)**
- **Purdue Research Foundation Summer Grant (\$ 8,000 + fringe)**

- 2008-2010 – **FQRNT¹ Postdoctoral Scholarship** (Approx. \$ 59,000 total)
- 2007-2008 – **FQRNT Doctoral Scholarship** (Approx. \$ 27,500 total)
- 2005-2007 – **NSERC² Doctoral Scholarship** (Approx. \$ 42,000 total)
- 2003-2005 – **NSERC Master’s Scholarship** (Approx. \$ 38,500 total)
- 2004 – **Outstanding Teaching Award, MIT Chemistry Dept.**
- 2003 – **John Williamson Frederick Peacock Memorial Scholarship Award** (Approx. \$ 5,000)
 – **Society of Chemical Industry Merit Award**
 – **Anachemia Prize in Chemistry**
 – **Lucien Piché Award** (Approx. \$ 1,500)
 – **R.F. Robertson Award in Physical Chemistry**
- 2002 – **Herbert J. Brennen Scholarship** (Approx. \$ 2,000)
 – **Canadian Society for Chemistry, Silver Medal**
 – **Frederic J. LeMaistre Award** (Approx. \$ 1,000)
 – **Undergraduate research NSERC scholarship** (Approx. \$ 4,500)

Teaching and Mentoring (in rank):

Research Mentoring:

11 postdoctoral fellows: Konstantinos Tsekouras (Jul. 2013-Jun. 2017), Ioannis Sgouralis (Jul. 2016-Jul. 2020), Mateusz Chwastyk (Feb. 2017-Dec. 2017), David Rowland (Jan. 2017-May 2018), Sean Seyler (Jan. 2018-Dec. 2020), Zeliha Kilic (Jul. 2018-Sep. 2021), Lei Zhou (Jun. 2020-Jun. 2021), Ayush Saurabh (Jul. 2020-), Mohamadreza Fazel (Jun. 2020-), Jessica Vlcek (Aug. 2021-Dec. 2022), Pedro Pessoa (Jun. 2022-)

7 PhD students: Hossein Jashnsaz (Jan. 2013-Jun. 2017), Meysam Tavakoli (Jun. 2015-Jun. 2020), Sina Jazani (Jun. 2015 - Jun. 2020), Shepard Bryan (Jan. 2019-), Weiqing Xu (Sep. 2020-), Maxwell Schweiger (Aug. 2021-), Alex Rojewski (Sep. 2022-)

5 Master’s students: Ross Wallgren (Aug. 2017-May 2019), Shreya Ray (Dec. 2018-May 2019), Mikayla Carlson (Aug. 2018-May 2020), Camille Moyer (Jan. 2020-Dec. 2021), Matthew Safar (Aug. 2021-May 2022)

1 Master’s intern: Robert Zigon (Jun. 2013-Sep. 2013)

50+ Undergraduate students: Ramia Mekhla (2021-), Alex Rojewski (2021-2022), Sarah Perleberg (2021-2022), Vishesh Kumar (2021-), Eric Bryan (2020-2022), Milena Stambolic (2021-), Alec Sanchez (2017-2019), Shreya Madaan (2017-2019), Matthew Safar (2019-2021), Claire Cirelli (2020), Austin Gallimore (2019-2021), Crystal Kubby (2017-2018), Diana Okeyo (2018), Nicolle Villoria (2017), Sean Sipes (2017), Clayton Hui (2017), Melody Yeh (2017), Mikayla Carlson (2017-2018), Aiden Check (2017), Ayan Rafique (2017), Freddy Melara (2017), Indrajit Badvaram (2017), Stephanie Perkins (2015-2016), Nick Miller (2015-2016), Ross Wallgren (2015-2016), Christopher O’Connor (2015-2016), Margaret Ann Christy (2016, REU, Purdue), Gregory Jevens (2016, REU, CUNY), Viktoria Meyerhoff (2015-2016), Lindsay Hale (2015, UROP), Corey Weistuch (2015-2016, REU, SUNY Stony Brook), Stjepan Kraljic (2014), Lana Serikof (2014), Michaela Conteh (2014), Justin Scisocoe (2014), Harshel Naik (2014-2015), Camilo Gomez (2014-2015), Jaime Velazquez (2014), Jacques Roettcher (2014), Nicholas Proctor (2014-2016), Bryan McCoy (2014-2016), Kylee Johnson (2014-2015), Ian Daly (2014-2015), Morgan Cook (2014), Mohammed Al-Juboori (2014-2016), Peter Anderson (2013-2014), Fawaz Butt (2013), Tyler Nguyen (2013-2014),

¹Le Fonds québécois de la recherche sur la nature et les technologies

²Natural Sciences and Engineering Research Council of Canada

Bhavesh Ghandi (2013), Jason Walsman (2013)

7 high-school students: Lucas Burke (2013), Ephraim Retta (2013), Roger Biak (2014), Matt Muhoberac (2015), Emily Perez (2016), Vivian Nguyen (2018), Supriya Weiss (2018)

Teaching:

Graduate Statistical Physics (IUPUI, PHYS 617), Electricity and Magnetism (IUPUI, PHYS 251), Graduate Biophysics (IUPUI, PHYS 585), Undergraduate Statistical Physics (ASU, PHYS 441), Data Analysis (ASU, PHYS /CHEM 598).

Conferences, Seminars, Workshops

Invited Talk - q-bio 2023, Shenzhen, China, Jul. 2023

Invited Talk - Workshop entitled “Conference: Sensory Prediction, Engineered and Evolved”, Santa Fe, NM, Jul. 2023

Invited Zoom Talk - Invited talk, Light Microscopy Interest Group (LMIG) Seminar, NIH, Online only, May 2023

Contributed Talk - Focus on microscopy (FOM), Porto, Portugal, Apr. 2023

Invited Talk - Tutorial at session “Machine Learning and Model Inference for Biological Physicists”, American Physical Society (APS), Las Vegas NV, Mar. 2023

Poster - Biophysical Society (BPS), San Diego CA, Feb. 2023

Invited Zoom Talk - Invited talk, FCS@50, Kerala India, Jan. 2023

Co-Organizer - CECAM Workshop on “Data Modeling and Computation: Capturing Biomolecular Processes” –CECAM, Lausanne, Switzerland, Nov. 2022

Invited Talk - Symposium, American Chemical Society (ACS), Chicago IL, Sep. 2022

Co-Organizer - Workshop on “The Complexity of Dynamics and Kinetics from Single Molecules to Cells” –Telluride Science Research Center, Telluride CO, Jun. 2022

Co-organizers: Douglas P. Shepherd, Tamiki Komatsuzaki

Invited Talk - Invited talk, Les Houches Conference “Protein Dynamics”, Aussois, France, May 2022

Invited Zoom Talk - Invited talk, CRC 1456 “Mathematics of Experiment: The challenge of indirect measurements in the natural science”, Goettingen, Germany, Mar. 2022

Organizer - and Session Chair “Data Science for Biophysics” –American Physical Society (APS), Chicago IL, Mar. 2022

Invited Zoom Talk - Invited talk, Biological Physics/Physical Biology (BPPB) Seminar, Online only, Feb. 2022

Platform Talk - Selected platform talk at workshop “Computational Methods and Bioinformatics II” –Biophysical Society (BPS), San Francisco CA, Feb. 2022

Invited Zoom Talk - Colloquium, Physics Dept., Univ. British Columbia, Vancouver BC, Jan. 2022

Invited Zoom Talk - Workshop on “Trans-scale Biochemical Analysis of Rare Events in Living Systems: Singularity Biology” – Pacifichem 2021, Honolulu HI, Dec. 2021

Invited Zoom Talk - Invited talk, FCS2021 Conference, Kerala, India, Nov. 2021

Invited Zoom Talk - Colloquium, Physics Dept., Simon Fraser Univ., Vancouver BC, Sep. 2021

Invited Talk - Colloquium, Physics Dept., Univ. of Arizona, Tucson AZ, Sep. 2021

Invited Zoom Talk - Seminar, q-bio Summer School, Fort Collins, CO, Jul. 2021

Invited Zoom Lecturer - Workshop – q-bio Summer School, Fort Collins, CO, Jul. 2021

Invited Zoom Talk - Seminar, Systems and Computational Biology Dept., Einstein College of Medicine, Bronx, NY, May 2021

Invited Zoom Talk - Colloquium, School of Molecular Sciences, Arizona State Univ., Tempe, AZ, Dec. 2020

Invited Zoom Talk - Seminar, Dept. Physics and Astronomy, Purdue, West Lafayette, IN, Nov. 2020

CANCELLED (COVID) **Invited Talk** - Invited talk, Biophysical Dynamics Workshop, Santa Fe NM, Jul. 2020

CANCELLED (COVID) **Invited Talk** - Workshop on “Single Molecule Dynamics” –Telluride Science Research Center, Telluride CO, Jun. 2020

CANCELLED (COVID) **Invited Talk** - Workshop on “Quinary Interactions: Structure, Dynamics, Function” –Telluride Science Research Center, Telluride CO, Jun. 2020

CANCELLED (COVID) **Invited Talk** - Invited talk, ETH, Zuerich, Switzerland, Jun. 2020

CANCELLED (COVID) **Invited Talk** - Invited talk, TSRC Protein Dynamics Workshop, Les Houches, France, Jun. 2020

Invited Zoom Talk - Colloquium, Physics Dept., Ariz. State Univ., Tempe, AZ, Apr. 2020

Invited Talk - Invited talk at workshop “Fluorescence Correlation Spectroscopy” –Biophysical Society (BPS), San Diego CA, Feb. 2020

Invited Talk - Invited talk, XXIIInd Annual Linz Winter Workshop on single molecules, Linz, Austria, Feb. 2020

Invited Talk - Invited talk, QBI 2020, London, United Kingdom, Jan. 2020

Invited Talk - Invited talk, Nature Conference “Functional dynamics - visualizing molecules in action”, Ariz. State Univ., Tempe, AZ, Nov. 2019

Invited Talk - Seminar, Dept. of Mathematics and Actuarial Sciences, American University of Cairo, Cairo, Egypt, Oct. 2019

Invited Talk - Seminar, Physics Dept., American University of Cairo, Cairo, Egypt, Oct. 2019

Co-Organizer - Workshop on “The Complexity of Dynamics and Kinetics from Single Molecules to Cells” –Telluride Science Research Center, Telluride CO, Jun. 2019
Co-organizers: Stephen R. Berry, Tamiki Komatsuzaki

Invited Talk - Session on “Statistical Analysis in Biophysics and Climate” –SIAM Dynamical Systems Conference, Snowbird UT, May. 2019

Invited Talk - Colloquium, Dept. Chem., UT Austin, Austin, TX, Apr. 2019

Invited Talk - Invited talk, QBI 2019, Rennes, France, Jan. 2019

Invited Talk - Invited talk, College of Chemistry, Weizmann Institute, Israel, Jan. 2019

Invited Talk - Workshop “Simons Workshop on Nonequilibrium Physics in Biology”, Stony Brook Univ., Stony Brook NY, Dec. 2018

Invited Talk - Colloquium, Dept. of Bioengineering, CU Fort Collins, Fort Collins CO, Nov. 2018

Co-Organizer - Workshop “Statistical Physics in Biology: A workshop in the honor of Ken Dill”, Ariz.

State Univ., Tempe, AZ, Oct. 2018

Invited Talk - Invited talk, Molecular Spectroscopy Laboratory, RIKEN, Saitama, Japan, Oct. 2018

Invited Talk - Invited talk, Laboratory of Molecular and Life Nonlinear Sciences, Hokkaido, Japan, Oct. 2018

Invited Talk - 6th International Symposium on “Ambitious Leader’s Program for Fostering Future Leaders to Open New Frontiers in Materials Science”, Hokkaido, Japan, Oct. 2018

Invited Talk - Workshop on “Mathematical methods for reconstructing molecular dynamics in single cells”, Pisa, Italy, Oct. 2018

Invited Talk - Workshop on “Biophysical Dynamics” –Telluride Science Research Center, Telluride CO, Jul. 2018

Invited Talk - Workshop on “Single Molecule Workshop: Theory Meets Experiment” –Telluride Science Research Center, Telluride CO, Jun. 2018

Invited Talk - Workshop – 12th Annual q-bio Summer School, Rice University, Houston TX, Jun. 2018

Invited Talk - Invited talk, Biophysical Society of Canada, Vancouver BC, May 2018

Invited Talk - Lecture, Laufer Center for Physical and Quantitative Biology, Stony Brook University, Stony Brook NY, Mar. 2018

Invited Participant - “Working Group: Extending the reach of info-metrics to dynamic and non-hierarchical complex systems”, Santa Fe Institute, Santa Fe NM, Mar. 2018

Organizer - and Session Chair “Inference and Stochastic Processes in Biophysics” –American Physical Society (APS), Los Angeles CA, Mar. 2018

Invited Participant - ALT2018 Workshop, Johns Hopkins, Baltimore MD, Mar. 2018

Invited Talk and Tutorial - Invited Lecture and Tutorial on Data Analysis, QB3, UC Berkeley, Berkeley CA, Feb. 2018

Invited Talk - Colloquium, Dept. Physics and Astronomy, Rutgers, Piscataway NJ, Feb. 2018

Invited Talk - Colloquium, Dept. Biophysics and Biophysical Chem., Johns Hopkins School of Medicine, Baltimore MD, Nov. 2017

Invited Talk - Bioinformatics Seminar, Soongsil University, Seoul, South Korea, Sep. 2017

Invited Talk - 17th KIAS Conference on Protein Structure and Function, Seoul, South Korea, Sep. 2017

Invited Talk - Workshop on “Deciphering Complex Energy Landscape and Kinetic Network from Single Molecules to Cells”, Dijon, France, Sep. 2017

Invited Talk - Colloquium, Dept. Physics, Arizona State U., Tempe AZ, August 2017

Invited Lecturer - Workshop – 11th Annual q-bio Summer School, Fort Collins CO, Jun. 2017

Co-Organizer - Workshop on “The Complexity of Dynamics and Kinetics from Single Molecules to Cells” –Telluride Science Research Center, Telluride CO, Jun. 2017

Co-organizers: Stephen R. Berry, Tamiki Komatsuzaki

Organizer - and Session Chair “Tracking, Localization and Inference in Live Cells: Methods and Applications ” –American Physical Society (APS), New Orleans LA, Mar. 2017

Invited Talk - Symposium, American Physical Society (APS), New Orleans LA, Mar. 2017

Invited Talk - Gordon Research Conference on Stochastic Physics in Biology, Ventura CA, Jan. 2017

Invited Talk - Seminar, Chemistry Dept., Rice, Houston TX, Nov. 2016

Invited Talk - Seminar, MidQBio Conference, Purdue, West Lafayette IN, Oct. 2016

Invited Talk - Seminar, Center for Molecular Simulation, Univ. Calgary, Calgary AB, Oct. 2016

Invited Lecturer - Workshop – 10th Annual q-bio Summer School, Fort Collins CO, Jul. 2016

Invited Talk - Workshop on “Single Molecule Workshop: Theory Meets Experiment” –Telluride Science Research Center, Telluride CO, Jul. 2016

Invited Talk - EMBO Conference: The biochemistry and chemistry of biocatalysis, Oulu, Finland, Jun. 2016

Invited Talk - Conference on “Mathematical and Computational Medicine”, Ohio State U., Columbus OH, May 2016

Invited Talk - Seminar, Dept. Molecular Science, Arizona State U., Tempe AZ, May 2016

Invited Talk - Statistical Physics Seminar, Dept. of Chemistry, UC Berkeley, Berkeley CA, Apr. 2016

Invited Talk - Biophysics Seminar, Dept. of Chemistry, U. Chicago, Chicago IL, Apr. 2016

Invited Talk - Physics Frontier Seminar, UIUC, Urbana-Champaign IL, Apr. 2016

Co-Organizer - and Session Chair “Inference in Biophysics” –American Physical Society (APS), Baltimore MD, Mar. 2016
Co-organizer: David Schwab

Invited Talk - Seminar, Dept. of Physics, Iowa State U., Ames IA, Mar. 2016

Primary Co-Organizer - MBI workshop on “Modeling and Inference from Single Molecule to Cells” – Ohio State MBI Workshop, Columbus OH, Feb. 2016
Co-organizers: Ashok Prasad, John Fricks, Jayajit Das

Invited Talk - MBI workshop on “Modeling and Inference from Single Molecule to Cells” – Ohio State MBI Workshop, Columbus OH, Feb. 2016

Invited Talk - Seminar, Dept. of Physics, McGill U., Montréal QC, Feb. 2016

Invited Talk - Seminar, Dept. of Chemistry, McGill U., Montréal QC, Feb. 2016

Invited Talk - Seminar, Biodesign and Dept. of Physics, Arizona State U., Tempe AZ, Jan. 2016

Invited Talk - Workshop on “Deciphering molecular complexity from protein functions to cellular network” – Pacificchem 2015, Honolulu HI, Dec. 2015

Invited Talk - Seminar, Dept. of Physics, Arizona State U., Tempe AZ, Oct. 2015

Invited Talk - Seminar, Biophysics Seminar, Ohio State U., Columbus OH, Sep. 2015

Invited Talk - Seminar, Nationwide Children’s Hospital, Ohio State U., Columbus OH, Sep. 2015

Invited Talk - Seminar, Battelle Center, Ohio State U., Columbus OH, Sep. 2015

Invited Lecturer - Workshop – 9th Annual q-bio Summer School, Fort Collins CO, Jul. 2015

Invited Talk - Workshop on “Biophysical Dynamics” –Telluride Science Research Center, Telluride CO, Jul. 2015

Co-Organizer - Workshop on “The Complexity of Dynamics and Kinetics from Single Molecules to Cells” –Telluride Science Research Center, Telluride CO, Jun. 2015
Co-organizers: Stephen R. Berry, Tamiki Komatsuzaki

Invited Talk - Seminar, Dept. of Physics and Astronomy, University of Missouri, Columbia MO, Apr. 2015

Invited Talk - Seminar, Dept. of Physics and Astronomy, Purdue, West Lafayette IN, Mar. 2015

Invited Participant - Scialog “Molecules come to life” hosted by the Research Corporation, Tucson AZ, Mar. 2015

Organizer - and Session Chair “Stochastic Model Inference from Biophysical Data” –American Physical Society (APS), San Antonio TX, Mar. 2015

Invited Talk - Seminar, 2nd Zing Conference on Mathematical Medicine, Cancun, Mexico, Dec. 2014

Invited Talk - Seminar, Physics Dept., Michigan State University, Lansing MI, Nov. 2014

Invited Talk - Seminar, Faculty Homecoming, IUPUI, Indianapolis IN, Oct. 2014

Invited Talk - Seminar, Center for *In Silico Protein Science*, KIAS, Seoul, South Korea, Sep. 2014

Invited Talk - Seminar, Chemistry Dept., Seoul National University, Seoul, South Korea, Sep. 2014

Invited Talk - 14th KIAS Conference on Protein Structure and Function, Seoul South Korea, Sep. 2014

Invited Talk - Seminar, Chemistry and Chemical Bio. Dept., IUPUI, Indianapolis IN, Sep. 2014

Invited Talk - Seminar, Biology Dept., IUPUI, Indianapolis IN, Sep. 2014

Organizer - and Session Chair “Probability Inverse Problems in Biophysics” –SIAM Life Sciences, Charlotte NC, Aug. 2014

Invited Talk - Symposium, SIAM Life Sciences, Charlotte NC, Aug. 2014

Attendee - New Faculty Workshop, AAPT, College Park MD, Jun. 2014

Invited Talk - Symposium, American Physical Society (APS), Denver CO, Mar. 2014

Organizer - and Session Chair “Inferring Physical Models from Noisy Biological Data” –American Physical Society (APS), Denver CO, Mar. 2014

Poster - Biophysical Society (BPS), San Francisco CA, Feb. 2014

Invited Talk - Seminar, Integrative Physiology Dept., IU School Medicine, Indianapolis IN, Jan. 2014

Invited Talk - Seminar, Computer Science Dept., IUPUI, Indianapolis IN, Jan. 2014

Invited Talk - Seminar, Physics Dept., Ball State University, Muncie IN, Oct. 2013

Invited Talk - Workshop on “Single Molecule Dynamics” –Telluride Science Research Center, Telluride CO, Jul. 2013

Invited Talk - Workshop on “Complexity of Dynamics and Kinetics in Many Dimensions” –Telluride Science Research Center, Telluride CO, Jul. 2013

Invited Talk - Seminar, iM2CS Group – Math Dept., IUPUI, Indianapolis IN, Apr. 2013

Invited Talk - Seminar, Indiana Academy of Sciences, Indianapolis IN, Mar. 2013

Invited Talk - Seminar, Statistics Dept., Pennsylvania State University, College Park PA, Mar. 2013

Contributed Talk - American Physical Society (APS), Baltimore MD, Mar. 2013

Invited Talk - Seminar, Physics Dept., IUPUI, Indianapolis IN, Feb. 2013

Poster - Gordon Research Conference on Stochastic Physics in Biology, Ventura CA, Jan. 2013

Contributed Talk - Biophysics Seminar, Physics Dept., UC Berkeley, Berkeley CA, Apr. 2012

Invited Talk - Seminar, Chemical Physics Lab., NIH-NIDDK, Bethesda MD, Apr. 2012

Invited Talk - Seminar, Chemistry Dept., Wichita State University, Wichita KS, Apr. 2012

Invited Talk - Seminar, Physics Dept., IUPUI, Indianapolis IN, Apr. 2012

Contributed Talk - American Chemical Society (ACS), San Diego CA, Mar. 2012

Contributed Talk - American Physical Society (APS), Boston MA, Feb. 2012

Contributed Talk – (talk on behalf of Julian Lee)– Biophysical Society (BPS), San Diego CA, Feb. 2012

Invited Talk - Seminar -Physics Dept., Concordia University, Montréal, Jan. 2012

Invited Talk - Seminar -Single molecule group, UC Berkeley, Berkeley CA, Jul. 2011

Contributed Talk - Biophysical Society (BPS), Baltimore MD, March 2011

Poster - Gordon Research Conference on Stochastic Physics in Biology, Ventura CA, Jan. 2011

Poster - Biophysical Society (BPS), San Francisco CA, Feb. 2010

Invited Talk - Seminar -Single molecule group, UC Berkeley, Berkeley CA, Jan. 2010

Poster - American Chemical Society (ACS), San Francisco CA, Mar. 2010

Invited Talk - Seminar, Dept. of Physics and Astronomy, U. of Denver, Denver CO, Jan. 2009

Poster - XXIII IUPAP International Conference on Statistical Physics, Genoa, Italy, Jul. 2007

Contributed Talk - American Chemical Society (ACS), Atlanta GA, Mar. 2006

Poster - American Conference of Theoretical Chemistry (ACTC), Los Angeles CA, Jul. 2005

Attendee - Workshop in Computational Biophysics offered by K. Schulten group, Boston MA, Dec. 2004

Consulting:

Roswell Biotechnologies, GLG Consulting, Eli Lilly

Activities and Initiatives

– **Organized conferences and symposia listed in “Conferences” section above**

2022	Editorial Board–Biophysics and Physicobiology (BPPB)
2020	Co-Organizing Committee, q-Bio 2020
2019	Co-Organized special edition in J. Physical Chemistry B entitled “Deciphering Molecular Complexity in Dynamics and Kinetics–From the Single Molecule to the Single Cell Level”
2017 -2020	Presenter of an interactive program (“Bacterial Serengeti”) at the South Mountain Education Center (Phoenix Zoo affiliated)

2015 Member of the Journal *entropy*'s editorial board
-2016 Co-Organizer of IUPUI's iM2CS Seminar
Member IUPUI Imaging Research Initiative (IRI) Council
Presenter of an interactive program entitled "Bacterial Serengeti"
at the Indianapolis Zoo (K-12)

2014 Indiana Academy of Sciences – Chair Elect (Physics Section)
-2015

2013 Indiana Academy of Sciences – Vice-Chair Elect (Physics Section)

2013 Hosted high school students through the D.J. Angus-Sciencetech foundation
-present and ACS project SEED

2005 MIT organizer of the Greater Boston Theoretical Chemistry Lecture Series
-2008

Member: Sigma Xi, Golden Key, American Physical Society (APS).

Ad hoc reviewer (journals): *Nat. Comm.*, *Nat. Meth.*, *Nat. Protocols*, *Biophys. J.*, *Trends in Biotech.*, *Phys. Rev. E*, *Phys. Rev. A*, *Phys. Rev. X*, *Phys. Rev. Lett.*, *Proc. Natl. Acad. Sc.*, *J. Stat. Phys.*, *Phys. Bio.*, *Phys. Lett. A*, *entropy*, *RSC's Chemical Science*, *PLoS Comp. Bio.*, *Pramana Physics*, *Frontiers Microbiology*, *The Biophysicist*, *J. Phys. Chem. B*, *J. Chem. Phys.*, *Mol. Biol. and Evol.*, ...

Ad hoc editor (journals): *PNAS*, *entropy*

Ad hoc reviewer (funding programs/agencies): Fondecyt (Chilean National Science and Technology Commission), ACS Petroleum Research Fund, Kavli Microbiome Ideas Challenge, Netherlands Organization for Funding Research, Army Research Office (U.S.), National Science Foundation (U.S.), Research Corp (U.S.)

Languages and other abilities

Native fluency in **French**, **English** and **Italian**; solid working knowledge of **German** and **Spanish**.
Other abilities: violin, piano, harpsichord.