Arvind **Murugan**

773-834-3146 | amurugan@uchicago.edu | muruganlab.uchicago.edu/ | 0000-0001-5464-917X | @murugan_chicago | KClBPZUAAAAJ

Appointments

Associate Professor — *University of Chicago*
Physics + James Franck Institute — *2023 -*

Assistant Professor — *University of Chicago*
Physics + James Franck Institute — *2015 - 2023*

Postdoctoral fellow — *Harvard University*
Applied Math (Michael Brenner group) — *2012 - 2015*

Member — *Institute for Advanced Studies*
Simons Center — *2009 - 2012*

Visiting researcher — *Rockefeller University*
Stanislas Leibler group — *2009 - 2012*

Education

Princeton University — *Princeton, NJ*
Ph.D in Physics — *09/2004 - 07/2009*

- Thesis: Gauge-gravity duality with renormalization group flow and reduced supersymmetry
- Advisor: Igor R. Klebanov

California Institute of Technology — *Pasadena, CA*
B.S. in Mathematics w/ honors — *09/2000 - 06/2004*

- Advisor: Anton Kapustin

Awards

2023 **National Science Foundation CAREER Award**, NSF
2017 **Simons Investigator**, Simons Foundation
2010 **Addie and Harold Broitman Member in Biology**, Institute for Advanced Study
2004 **Princeton University Graduate Centennial Fellowship**, Princeton University

Publications

Articles

1. Evans, Constantine Glen, O'Brien, Jackson, Winfree, Erik & Murugan, Arvind. Pattern recognition in the nucleation kinetics of non-equilibrium self-assembly. Nature **625,** 500–507 (2024).
2. Narla, Avaneesh, Hwa, Terence & Murugan, Arvind. Dynamic coexistence driven by physiological transitions in microbial communities. bioRxiv, 2024–01 (2024).
3. Arinze, Chukwunonso, Stern, Menachem, Nagel, Sidney R & Murugan, Arvind. Learning to self-fold at a bifurcation. Physical Review E **107,** 025001 (2023).
4. Devany, John, Falk, Martin J, Holt, Liam J, Murugan, Arvind & Gardel, Margaret L. Epithelial tissue confinement inhibits cell growth and leads to volume-reducing divisions. Developmental Cell (2023).
5. Falk, Martin, Strupp, Adam, Scellier, Benjamin & Murugan, Arvind. Contrastive learning through non-equilibrium memory. arXiv preprint arXiv:2312.17723 (2023).
6. Falk, Martin J, Wu, Jiayi, Matthews, Ayanna, Sachdeva, Vedant, Pashine, Nidhi, Gardel, Margaret L, Nagel, Sidney R & Murugan, Arvind. Learning to learn by using nonequilibrium training protocols for adaptable materials. Proceedings of the National Academy of Sciences **120,** e2219558120 (2023).
7. Goyal, Akshit, Flamholz, Avi I, Petroff, Alexander P & Murugan, Arvind. Closed ecosystems extract energy through self-organized nutrient cycles. arXiv preprint arXiv:2305.19102 (2023).
8. Stern, Menachem & Murugan, Arvind. Learning without neurons in physical systems. Annual Review of Condensed Matter Physics **14,** 417–441 (2023).

9. Apte, Anuj, Marwaha, Kunal & Murugan, Arvind. Non-Convex Optimization by Hamiltonian Alternation. arXiv preprint arXiv:2206.14072 (2022).
10. Falk, Martin J, Roach, Finn, Gilpin, William & Murugan, Arvind. Curiosity search for non-equilibrium behaviors in a dynamically learned order parameter space. arXiv preprint arXiv:2211.02589 (2022).
11. Schaffter, Samuel W, Chen, Kuan-Lin, O'Brien, Jackson, Noble, Madeline, Murugan, Arvind & Schulman, Rebecca. Standardized excitable elements for scalable engineering of far-from-equilibrium chemical networks. Nature Chemistry **14,** 1224–1232 (2022).
12. Su, Christina J, Murugan, Arvind, Linton, James M, Yeluri, Akshay, Bois, Justin, Klumpe, Heidi, Langley, Matthew A, Antebi, Yaron E & Elowitz, Michael B. Ligand-receptor promiscuity enables cellular addressing. Cell systems **13,** 408–425 (2022).
13. Falk, Martin J, Alizadehyazdi, Vahid, Jaeger, Heinrich & Murugan, Arvind. Learning to control active matter. Physical Review Research **3,** 033291 (2021).
14. Murugan, Arvind, Husain, Kabir, Rust, Michael J, Hepler, Chelsea, Bass, Joseph, Pietsch, Julian MJ, Swain, Peter S, Jena, Siddhartha G, Toettcher, Jared E, Chakraborty, Arup K, et al. Roadmap on biology in time varying environments. Physical biology **18,** 041502 (2021).
15. Son, Minjun, Wang, Andrew G, Tu, Hsiung-Lin, Metzig, Marie Oliver, Patel, Parthiv, Husain, Kabir, Lin, Jing, Murugan, Arvind, Hoffmann, Alexander & Tay, Savaş. NF-κB responds to absolute differences in cytokine concentrations. Science signaling **14,** eaaz4382 (2021).
16. Galstyan, Vahe, Husain, Kabir, Xiao, Fangzhou, Murugan, Arvind & Phillips, Rob. Proofreading through spatial gradients. Elife **9,** e60415 (2020).
17. Husain, Kabir & Murugan, Arvind. Physical constraints on epistasis. Molecular Biology and Evolution **37,** 2865–2874 (2020).
18. Sachdeva, Vedant, Husain, Kabir, Sheng, Jiming, Wang, Shenshen & Murugan, Arvind. Tuning environmental timescales to evolve and maintain generalists. Proceedings of the National Academy of Sciences **117,** 12693–12699 (2020).
19. Stern, Menachem, Arinze, Chukwunonso, Perez, Leron, Palmer, Stephanie E & Murugan, Arvind. Supervised learning through physical changes in a mechanical system. Proceedings of the National Academy of Sciences **117,** 14843–14850 (2020).
20. Stern, Menachem, Pinson, Matthew B & Murugan, Arvind. Continual learning of multiple memories in mechanical networks. Physical Review X **10,** 031044 (2020).
21. Zhong, Weishun, Lu, Zhiyue, Schwab, David J & Murugan, Arvind. Nonequilibrium statistical mechanics of continuous attractors. Neural Computation **32,** 1033–1068 (2020).
22. Husain, Kabir, Pittayakanchit, Weerapat, Pattanayak, Gopal, Rust, Michael J & Murugan, Arvind. Kalman-like Self-Tuned sensitivity in biophysical sensing. Cell systems **9,** 459–465 (2019).
23. Murugan, Arvind & Jaeger, Heinrich M. Bioinspired nonequilibrium search for novel materials. MRS Bulletin **44,** 96–105 (2019).
24. O'Brien, Jackson & Murugan, Arvind. Temporal pattern recognition through analog molecular computation. ACS Synthetic Biology **8,** 826–832 (2019).
25. Chew, Justin, Leypunskiy, Eugene, Lin, Jenny, Murugan, Arvind & Rust, Michael J. High protein copy number is required to suppress stochasticity in the cyanobacterial circadian clock. Nature communications **9,** 3004 (2018).
26. Pittayakanchit, Weerapat, Lu, Zhiyue, Chew, Justin, Rust, Michael J & Murugan, Arvind. Biophysical clocks face a trade-off between internal and external noise resistance. Elife **7,** e37624 (2018).
27. Stern, Menachem, Jayaram, Viraaj & Murugan, Arvind. Shaping the topology of folding pathways in mechanical systems. Nature communications **9,** 4303 (2018).
28. Thiermann, Ryan, Sweeney, Alison & Murugan, Arvind. Information content of downwelling skylight for non-imaging visual systems. bioRxiv, 408989 (2018).
29. Murugan, Arvind & Vaikuntanathan, Suriyanarayanan. Topologically protected modes in non-equilibrium stochastic systems. Nature communications **8,** 13881 (2017).
30. Pinson, Matthew B, Stern, Menachem, Carruthers Ferrero, Alexandra, Witten, Thomas A, Chen, Elizabeth & Murugan, Arvind. Self-folding origami at any energy scale. Nature communications **8,** 15477 (2017).
31. Stern, Menachem, Pinson, Matthew B & Murugan, Arvind. The complexity of folding self-folding origami. Physical Review X **7,** 041070 (2017).
32. Zhong, Weishun, Schwab, David J & Murugan, Arvind. Associative pattern recognition through macro-molecular self-assembly. Journal of Statistical Physics **167,** 806–826 (2017).
33. Huntley, Miriam H, Murugan, Arvind & Brenner, Michael P. Information capacity of specific interactions. Proceedings of the National Academy of Sciences **113,** 5841–5846 (2016).
34. Murugan, Arvind. Renormalization group flows in gauge-gravity duality. arXiv preprint arXiv:1610.03166 (2016).
35. Murugan, Arvind & Vaikuntanathan, Suriyanarayanan. Biological implications of dynamical phases in non-equilibrium networks. Journal of Statistical Physics **162,** 1183–1202 (2016).
36. Zwicker, David, Murugan, Arvind & Brenner, Michael P. Receptor arrays optimized for natural odor statistics. Proceedings of the National Academy of Sciences **113,** 5570–5575 (2016).
37. Murugan, Arvind, Zeravcic, Zorana, Brenner, Michael P & Leibler, Stanislas. Multifarious assembly mixtures: Systems allowing retrieval of diverse stored structures. Proceedings of the National Academy of Sciences **112,** 54–59 (2015).
38. Murugan, Arvind, Zou, James & Brenner, Michael P. Undesired usage and the robust self-assembly of heterogeneous structures. Nature communications **6,** 6203 (2015).
39. Murugan, Arvind, Huse, David A & Leibler, Stanislas. Discriminatory proofreading regimes in nonequilibrium systems. Physical Review X **4,** 021016 (2014).
40. Murugan, Arvind, Huse, David A & Leibler, Stanislas. Speed, dissipation, and error in kinetic proofreading. Proceedings of the National Academy of Sciences **109,** 12034–12039 (2012).
41. Klebanov, Igor R, Klose, Thomas & Murugan, Arvind. AdS4/CFT3 squashed, stretched and warped. Journal of High Energy Physics **2009,** 140 (2009).

42. Klebanov, Igor R, Kutasov, David & Murugan, Arvind. Entanglement as a probe of confinement. Nuclear physics B **796,** 274–293 (2008).
43. Klebanov, IR, Murugan, A, Rodriguez-Gomez, D & Ward, J. Goldstone bosons and global strings in a warped resolved conifold. Journal of High Energy Physics **2008,** 090 (2008).
44. Klebanov, Igor R & Murugan, Arvind. Gauge/gravity duality and warped resolved conifold. Journal of High Energy Physics **2007,** 042 (2007).
45. Baumann, Daniel, Dymarsky, Anatoly, Klebanov, Igor R, Maldacena, Juan, McAllister, Liam & Murugan, Arvind. On D3-brane potentials in compactifications with fluxes and wrapped D-branes. Journal of High Energy Physics **2006,** 031 (2006).
46. Kapustin, Anton & Murugan, Arvind. Fatgraph expansion for noncritical superstrings. arXiv preprint hep-th/0404238 (2004).

Invited talks

MIT — *Cambridge, MA*
Applied Math Seminar - *Evolution of non-equilibrium order* — *May 24*

1st Solvay conference in Biology — *Brussels, Belgium*
The organization and dynamics of biological computation - *Low dimensional error correction* — *Apr 24*

Simons Foundation — *New York, NY*
NITMB Annual Meeting - *Evolution of non-equilibrium order* — *Apr 24*

APS March meeting — *Minneapolis, MN*
Invited talk - *Learning multicomponent phase diagrams* — *Mar 24*

Aspen Institute for Physics — *Aspen, CO*
Computation in Physical systems - *Review/introduction talk* — *Jan 24*

29th Solvay conference on Physics — *Brussels, Belgium*
Structure and Dynamics of Disordered Systems - *Learning in disordered systems* — *Oct 23*

American Academy of Arts and Sciences — *Boston, MA*
Life in the Universe II - *A free lunch of speed and accuracy* — *Sep 23*

University of California, Merced (Remote) — *Merced, CA*
Physics colloquium - *Learning without neurons* — *Sep 23*

University of Michigan — *Ann Arbor, MI*
ICAM Complex Mechanical Metamaterials workshop - *Learning without neurons* — *Jul 23*

Gordon Conference on Molecular Mechanisms of Evolution — *Stonehill College, MA*
Evolution of proofreading — *Jun 23*

Northwestern University — *Chicago, IL*
qBio Symposium - *Dimensionality reduction in biology* — *Jun 23*

APS March meeting — *Las Vegas, NV*
Statistical physics Tutorial - *Learning without neurons* — *Mar 23*

NYU — *NYC, NY*
Physics colloquium - *Learning without neurons* — *Mar 23*

Harvard Medical School — *Boston, MA*
Theory lunch - *Learning without neurons* — *Feb 23*

Gordon Research Conference — *Ventura, CA*
Stochastic Processes in Biology - *Evolution of proofreading* — *Jan 23*

AMOLF — *Amsterdam, NL*
Physics Colloquium - *Origin of Maxwell Demons* — *Nov 22*

AMOLF — *Amsterdam, NL*
Workshop on Information Processing - *Neural computation with molecules* — *Nov 22*

TU Eindhoven — *Eindhoven, NL*
Physics/Chemistry Colloquium - *Neural computation with molecules* — *Nov 22*

Stanford — *Palo Alto, CA*
Coherent Network Computing - *Pattern recognition through nucleation* — *Oct 22*

Cargese Summer School — *Corsica, France*
Summer school - *Origin of kinetic proofreading* — *Sep 22*

Simons Center for Geometry and Physics — *Stony Brook, NY*

Geometry, Topology, and Symmetry in Soft and Living Matter - *Pattern recognition through nucleation* — *May 22*

Johns Hopkins — *Baltimore, MD*

Biophysics seminar - *Pattern recognition through nucleation* — *May 22*

Harvard University — *Cambridge, MA*

Widely Applied Mathematics - *Learning without neurons* — *Apr 22*

Illinois Institute of Technology — *Chicago, IL*

Pattern recognition through nucleation — *Apr 22*

APS March Meeting — *Chicago, IL*

Invited talk - *Learning without neurons* — *Mar 22*

University of Michigan — *Ann Arbor, MI*

Physics seminar - *Pattern recognition through nucleation* — *Sep 21*

Cold Spring Harbor (remote) — *Cold Spring Harbor, NY*

Clocks, Hourglasses, and History-dependent Clocks — *May 21*

University of Amsterdam (remote) — *Amsterdam, NL*

Materials that learn from examples — *May 21*

Biological Physics/Physical Biology series (Virtual) — *Zoom*

Neural network-like collective dynamics of molecules — *Apr 21*

qEvo 2021 — *Zoom*

Physical constraints on epistasis — *Jan 21*

Max Planck Institute (remote) — *Gottingen, Germany*

Neural network-like collective dynamics in molecules — *Dec 20*

Imperial College — *London, UK*

Physics of life series - *Neural network-like collective dynamics in molecules* — *Nov 20*

Tel Aviv University — *Tel Aviv, Israel*

Workshop on Pathways, Sequence and Memory - *Supervised learning in mechanics* — *Jun 20*

Banff International Research Station — *Banff, Canada*

Workshop on gene regulation - *Self-tuned sensitivity* — *Feb 20*

Massachusetts Institute of Technology — *Cambridge, MA*

Physics seminar - *Neural network-like collect dynamics in matter* — *Jan 20*

EPFL — *Lausanne, Switzerland*

CECAM workshop - *Learning in matter* — *Jan 20*

University of California, Los Angeles — *Los Angeles, CA*

Physics seminar - *Learning from examples* — *Oct 19*

National Science Foundation — *Alexandria, VA*

MRSEC Directors meeting - *Learning from examples* — *Sep 19*

University of Pennsylvania — *Philadelphia, PA*

Physics seminar - *Learning from examples* — *Sep 19*

Aspen Center for Physics — *Aspen, CO*

Information processing in cells - *Self-tuned sensitivity* — *Jul 19*

Frontiers of Biophysics — *Paros, Greece*

Interrupted transients — *Jun 19*

Chan-Zuckerberg Biohub — *San Francisco, CA*

Theory in Biology day - *Interrupted Transients* — *Mar 19*

Gordon Research Conference — *Ventura, CA*

Stochastic Physics and Biology - *Self-tuned trust in clocks* — *Jan 19*

University of Illinois — *Urbana Champaign, IL*

Physics seminar - *Transients in physics and biology* — *Nov 18*

Peking University — *Beijing, China*

Center for Quantitative Biology - *Transients in physics and biology* — *Oct 18*

DNA 24 — *Dajin, China*

Plenary Talk - *Associative memory in frustrated materials* — *Oct 18*

Penn State — *College Station, PA*

Physics seminar - *Internal models of the external world* — *Oct 18*

Emory University — *Atlanta, GA*

Physics Colloquium - *Associative memory in materials* — *Apr 18*

Simons Foundation — *New York, NY*

Theory in Biology conference - *Internal models of the external world* — *Apr 18*

Rice University — *Houston, TX*

Physics seminar - *Internal models of the external world* — *Apr 18*

APS March Meeting — *Los Angeles, CA*

Invited talk - *Towards a theory of self-folding* — *Mar 18*

KITP — *Santa Barbara, CA*

Memories workshop - *Associative memory in frustrated materials* — *Feb 18*

Princeton Center for Theoretical Science — *Princeton, NJ*

Workshop on frustration - *Associative memory in frustrated materials* — *Nov 17*

MIT — *Cambridge, MA*

Physics seminar - *Internal models of the external world* — *Oct 17*

University of Texas Southwestern — *Dallas, TX*

Systems Biology Seminar - *Internal models of the external world* — *Oct 17*

Washington University in St. Louis — *St Louis, MO*

Physics seminar - *Internal models of the external world* — *Sep 17*

QBio workshop — *New Brunswick, NJ*

Continuous attractors as unreliable estimators — *Jul 17*

Los Alamos National Lab — *Santa Fe, NM*

CNLS Annual workshop - *Fitting internal models to the external world* — *May 17*

Harvard University — *Cambridge, MA*

Widely Applied Math seminar - *Fitting internal models to the external world* — *Mar 17*

Northwestern University — *Chicago, IL*

Mechanical Engineering, - *When is something self-folding?* — *Jan 17*

Harvard University — *Cambridge, MA*

Workshop on Aging and Failure in biology - *Error correction through catastrophes* — *May 16*

Foundations of Nanoscience (FNANO) — *Snowbird, UT*

Invited speaker - *Control of heterogeneous self-assembly* — *Apr 16*

University of Illinois Urbana-Champaign — *Urbana, IL*

Urbana cond-mat Symposium - *Associative memory: A forgotten property of frustrated disordered materials* — *Mar 16*

Santa Fe Institute — *Santa Fe, NM*

Kinetic Networks workshop - *More computation by matter* — *Sep 15*

Rockefeller University — *New York, NY*

Center for Studies in Physics and Biology - *Control vs multi-functionality in disordered frustrated systems* — *Apr 15*

University of Colorado — *Colorado, Boulder*

Physics Colloquium - *Design principles for heterogeneous structure synthesis: Lessons from biology* — *Mar 15*

University of Colorado — *Colorado, Boulder*

Physics seminar - *Non-equilibrium error correction in biological and synthetic systems* — *Mar 15*

APS March Meeting — *San Antonio, TX*

Invited Talk - *Non-equilibrium error correction in biological and synthetic systems* — *Mar 15*

University of Massachusetts — *Massachusetts, Amherst*

Physics seminar - *Design principles for heterogeneous structure synthesis: Lessons from biology* — *Mar 15*

University of San Diego — *San Diego, CA*

Physics seminar - *Design principles for heterogeneous structures* — *Feb 15*

MIT — *Cambridge, MA*

Physics seminar - *Design principles for heterogeneous structures* — *Feb 15*

Aspen Institute for — *Physics, Aspen*

Unified Concepts in Glass Physics VI, - *Associative memory: A forgotten property of marginal frustrated systems* — *Feb 15*

Cornell — *Ithaca, NY*

LASSP Applied Physics seminar - *Design principles for heterogeneous structure synthesis: Lessons from biology* — *Jan 15*

University of Chicago — *Chicago, IL*

James Franck Institute, - *Design principles for heterogeneous structure synthesis: Lessons from biology* — *Jan 15*

Princeton University — *Princeton, NJ*

Department of Chemistry, - *Design principles for heterogeneous structure synthesis: Lessons from biology* — *Dec 14*

Universite Joseph Fourier — *Grenoble, France*

Associative memory and bottom-up materials synthesis — *Jul 14*

University of Nice — *Nice, France*

Laboratory of Condensed Matter Physics seminar - *Associative memory and bottom-up materials synthesis* — *Jun 14*

ESPCI — *Paris, France*

Associative memory and bottom-up materials synthesis — *Jun 14*

Brandeis — *Waltham, MA*

Physics Department - *Design principles for heterogeneous materials synthesis: Lessons from biology* — *Jun 14*

University of Chicago — *Chicago, IL*

Computations in Science Seminar - *Design principles for heterogeneous materials synthesis: Lessons from biology* — *May 14*

University of Maryland — *Maryland College Park, MD*

Institute for Physical Science and Technology, - *Design principles for material synthesis : Lessons from biology* — *Apr 14*

Northwestern — *Evanston, IL*

Applied Math Colloquium - *Design principles for material synthesis : Lessons from biology* — *Jan 14*

Boston Physical Biology Hangout — *Cambridge, MA*

Principles of non-equilibrium error-correction — *Dec 13*

Harvard — *Cambridge, MA*

Bauer Forum - *Self-assembly in imperfect conditions* — *Nov 13*

Perimeter Institute for Theoretical Physics — *Waterloo, ON*

Young Researchers Conference - *Gauge-gravity duality in 2 + 1 dimensions* — *Dec 08*

Institute for Nuclear Theory — *Seattle, WA*

String Theory Methods in the Real World, - *Entanglement as a probe of confinement* — *May 08*

Princeton University — *Princeton, NJ*

High-energy theory group seminar - *Entanglement and Confinement* — *Apr 08*

Cornell University — *Ithaca, NY*

High-energy theory group seminar - *Entanglement and Confinement* — *Apr 08*

University of Chicago — *Chicago, IL*

High-energy theory group seminar - *Entanglement as a measure of confinement* — *Nov 07*

Teaching

Ph 490	**Principles of Biological Physics**	*Fall 2015*
Ph 330	**Mathematical Methods for Physicists**	*Fall 2016*
Ph 490	**Principles of Biological Physics**	*Fall 2017*
Ph 330	**Mathematical Methods for Physicists**	*Fall 2017*
Ph 255	**Biological Physics**	*Spring 2018*
Ph 330	**Mathematical Methods for Physicists**	*Winter 2019*
Ph 121	**General Physics**	*Fall 2019*
Ph 330	**Mathematical Methods for Physicists**	*Winter 2020*
Ph 121	**General Physics**	*Fall 2020*
Ph 121	**General Physics**	*Fall 2021*
Ph 490	**Biological Physics**	*Fall 2022*
Ph 121	**General Physics**	*Fall 2023*
Ph 255	**Biological Physics**	*Winter 2023*
Ph 121	**General Physics**	*Fall 2024*
Ph 490	**Biological Physics**	*Winter 2024*

Trainees

Postdocs

Riccardo Ravasio — *Yen Fellow*
Current postdoc — *2020 - present*

Martin Falk — *Schmitt Futures Fellow*
Current postdoc — *2019 - present*

Yoshiya Matsubara — *Origins Initiative*
Current postdoc — *2023 - present*

Maryn Carlson
Current postdoc — *2023 - present*

Kabir Husain — *James McDonnell Fellow*
Currently: Faculty, Physics, University College London (2024) — *2018 - 2023*

Zhiyue Lu
Currently: Faculty, Chemistry, UNC Chapel Hill (2024) — *2017 - 2019*

Graduate students

Darren Liu
Current graduate student — *2023 - present*

Rudy Mendez Reina
Current graduate student — *2020 - present*

Milena Chakraverti-Wuerthwein — *Hertz Fellow*
Current graduate student — *2022 - present*

LaNijah Flagg
Current graduate student — *2022 - present*

Eric Rouviere
Current graduate student — *2018 - present*

Christopher Russo
Current graduate student — *2020 - present*

Kristina Trifonova — *NSF GRFP*
Current graduate student — *2024 - present*

Vedant Sachdeva — *Harper Dissertation Fellow*
Currently: Evozyne (biotech startup) (2023) — *2017 - 2022*

Jackson O'Brien
Currently: Lincoln Park Capital (biotech VC) (2023) — *2016 - 2021*

Weerapat Pittayakanchit

Currently: Krungthai Bank, Thailand (2023) *2016 - 2021*

Chukowunso Arinze

Currently: Kaoshi (founder) (2022) *2018 - 2020*

Menachem Stern *APS GSNP Award, Bloomenthal prize*

Currently: Faculty, AMOLF (2024) *2016 - 2019*

Undergraduates

Michael Peruzzo, *Current student* *2022 - present*
Sumana Turimella, *Current student* *2022 - present*
Leon Zhou, *Current student* *2022 - present*
Sedona Kessler, *Current student* *2023 - present*
Finn Roach, *Current student* *2021 - 2022*
Sophia Smith, Now: Grad Student, UT Austin Applied Math (2022) *2020 - 2021*
Sophia Chiang, Now: *2020 - 2021*
Viraaj Jayaram, Now: Grad Student, Yale Physics (2022) *2017 - 2019*
Leron Perez, Now: Grad Student, Stanford (2022) *2018 - 2019*
Jon Kutasov, Now: Optiver (fintech) (2021) *2019 - 2019*
Amber Bourdier, Now: ESILV, Paris (2019) *2017 - 2018*
Ryan Thiermann, Now: Grad Student, UC San Diego Physics (2022) *2015 - 2017*
Weishun Zhong, Now: Grad Student, MIT Physics (2022) *2016 - 2017*
Alexandra Carruthers Ferrero, Now: Grad Student, Univ Puerto Rico (2018) *2016 - 2016*

Service

2023 - **Deputy Director**, NSF Physics Frontier Center - U Chicago Center for Living Systems *Chicago, IL*
2022 - **Reviewing Editor**, eLife, Physics of Living Systems section *elifesciences.org*
2026 **Organizer**, Kavli Institute for Theoretical Physics, 3 week workshop on ‘learning without neurons’ *Santa Barbara, CA*
2025 - 27 **Chair line**, Gordon Research Conferece, Stochastic Physics in Biology *Ventura, CA*
2024 - 25 **Chair line**, American Physics Society, Delbruck prize committee
2024 **Organizer**, Aspen Center for Physics, Computing in Physical Systems Winter workshop *Aspen, CO*
2018 - 21 **Program committee**, Annual q-Bio meeting *Various*
2017,19,21 **Organizer**, American Physics Society March meeting, sessions on information and computing in biology *Various*