

# Eleni Katifori

University of Pennsylvania, 209 South 33rd Street, Philadelphia, PA 19104-6396

📞 (617) 721-6209 • 📞 (215) 746-1205 • 📠 (215) 898-2010  
✉ katifori@sas.upenn.edu • 🌐 web.sas.upenn.edu/katifori/

*Last updated: 2023-03-30*

**Research interests:** soft matter physics, biological physics, complex systems, distribution networks, vascular systems, thin shell elasticity, wrinkling, eusocial insects and trophallaxis.

## Academic appointments

---

- **University of Pennsylvania, Dept of Physics and Astronomy** **Philadelphia, PA**  
*Associate professor* *July 2020–today*
- **University of Pennsylvania, Dept of Physics and Astronomy** **Philadelphia, PA**  
*Assistant professor* *January 2015–June 2020*
- **Max Planck Institute for Dynamics and Self-Organization** **Göttingen, Germany**  
*Independent Max Planck Group Leader* *May 2012 - December 2014*
- **Rockefeller University** **New York, NY**  
*Postdoctoral fellow* *October 2008–May 2012*  
Burrroughs Wellcome Career at the Scientific Interface Fellow and Fellow at the Center for Studies in Physics and Biology

## Education

---

- **Harvard University** **Cambridge, MA**  
*Physics department, MA 2004 and PhD 2008* *2002–2008*  
Thesis title: Vortices, rings and pollen grains: Elasticity and statistical physics in soft matter, Advisor: Prof David Nelson
- **National University of Athens** **Athens, Greece**  
*Department of Physics, B.S.* *June 2002*  
GPA : 9.5/10.0, top of class

## Visiting positions.....

- **Université Paris Diderot** **Paris, France**  
*Visiting professor* *September 2017*
- **Flatiron Institute, CCB** **New York, NY**  
*Visiting researcher* *October 2022–now*

## Professional societies.....

- o Member, American Physical Society
- o Member, Society for Industrial and Applied Mathematics

## Teaching

---

Principles II	PHYS 141/151	UPenn	Spring 2022
Introduction to Statistical Mechanics	PHYS 401	UPenn	Fall 2021
Biological Physics	PHYS 580	UPenn	Spring 2021
Introduction to Statistical Mechanics	PHYS 401	UPenn	Fall 2020
Biological Physics	PHYS 580	UPenn	Spring 2020
Principles II	PHYS 141/151	UPenn	Fall 2019
Biological Physics	PHYS 580	UPenn	Spring 2019
Principles II	PHYS 141/151	UPenn	Fall 2018
Intro to Condensed Matter Physics	PHYS 518	UPenn	Spring 2018
Principles II	PHYS 141/151	UPenn	Fall 2017
Principles II	PHYS 141/151	UPenn	Fall 2016
Principles II	PHYS 141/151	UPenn	Fall 2015
Biological Physics	PHYS 580	UPenn	Spring 2015
Theoretical biophysics		Uni Goettingen	Fall 2013
Principles of Self-Organization in Biophysics (new course)		Uni Goettingen	Spring 2012
Theoretical biophysics		Uni Goettingen	Fall 2012

## Awards and scholarships

---

- o 2021 APS Early Career Award for Soft Matter Research.
- o Simons Investigator in the Mathematical Modeling of Living Systems (2018)
- o NSF Career Award, (2016)
- o Burroughs Wellcome Career Award at the Scientific Interface (2011)
- o Sackler Fellow at the Center for Studies in Physics and Biology, Rockefeller University (2009-2011)
- o Purcell Fellowship (2002)
- o Panteia Ralli Scholarship (2001)
- o Scholarship and award from the Greek National Fellowship Foundation (IKY) 1997-2000

## Selected recent invited talks

---

- o March 8 2023, APS March meeting, Invited talk
- o February 22 2023, University of Minnesota, department of Mechanical Engineering, department seminar
- o February 6 2023, Bryn Mawr, Physics colloquium
- o January 4 2023, Aspen conference "Active Matter in Complex Environments", invited talk
- o November 21 2022, DFD invited talk
- o November 16 2022, Cold Spring Harbor seminar
- o October 3 2022, Harvard University Applied Math seminar
- o April 1, 2022, NERCCS, invited seminar (cancelled due to illness)
- o March 1, 2022, University of Chicago, Theory in Biology Seminar (virtual)
- o February 1 2022, Flatiron Inst, CCMB
- o December 14 2021, University of Leipzig Physics Colloquium: "Flow networks in Flux"

- October 29 2021, New Jersey Institute of Technology, Applied Math Colloquium: “Local rules for global optimization of distribution networks”
- October 13 2021, Simons Foundation NY, Simons Foundation lecture (public talk)
- October 4 2021, Montpellier, Second International School on Hemophysics, Lectures at HemPhys2 School
- September 17, 2021, NYU, New York Physics Colloquium, “Flow networks in Flux”
- June 25 2021, Venice, Workshop Stochastic Models and Experiments in Ecology and Biology, Invited talk, “Coarse grained models for transport in random spatially embedded networks”
- April 19 2021, University of Birmingham, Applied Math seminar, Form from flow: “The role of dynamics in shaping fluvial and vascular topology”
- March 18 2021, March meeting APS Invited DSOFT Early Career Award talk, “How a functional distribution network builds itself”
- March 14 2021, March meeting short course on Topological data analysis , “Topological data analysis of Functional networks”
- March 10 2021, Lorentz Center Workshop: Autonomous Behaviour in Living and Robotic Matter 2021, “Autonomous fluidic systems”
- December 05 2020, 2020 Annual Meeting of the APS Mid-Atlantic Section, Invited talk, “Pulse propagation in compliant complex networks”
- October 19 2020, U Washington, Colloquium Physics, “Form from flow: The role of fluctuations in shaping fluvial and vascular topology”
- September 11 2020, Arizona, Colloquium, Applied Mathematics, “Form from flow: The role of fluctuations in shaping fluvial and vascular topology”
- July 31 2020, Workshop “(What) can soft matter physics teach us about biological function?” (virtual workshop organized by Emory University)
- June 12 2020, BPPB seminar “The price of a pulse” (online seminar series on Biological Physics with ~ 200 regular attendees)
- June 10 2020, Cardiff U, (invited talk delivered virtually)
- May 19 2020, Rockefeller University U, (invited talk delivered virtually)
- March 1 2020, Denver APS, “The topography of tuning”, (invited talk delivered virtually)
- February 11 2020, Georgetown, Colloquium Physics, “Design principles for networked flow systems”
- January 14 2020, MEAM UPenn, “Engineering optimally perfusing fluidic networks”
- January 24 2020, Syracuse Biophysics seminar, “Engineering optimal fluidic networksEngineering optimal fluidic networks”
- December 15 2019, Rutgers 122 statistical mechanics conference, “Fluidic networks as (meta) materials”
- December 4 2019, Cornell, Biophysics seminar, “Self-organization in living flow networks”
- December 3 2019, Cornell, LASSP seminar, “Mapping the topology of tuned complex systems”
- October, 23 2019, APS DFD (invited talk), “Living flow networks”
- October 30 2019, Washington University in St Louis, Physics colloquium
- October 25 2019, GraphyZ, Grenoble France, “Shells”
- September 17 2019, Georgia Tech, Soft Condensed Matter and Physics of Living Systems Seminar, “Dynamics of living flows” Simons Foundation NY
- August 2019, Colby Sawyer College, Gordon conference, Soft Condensed Matter Physics, “Dynamics of living flows”
- July 2019, Boulder School for Condensed Matter and Materials Physics 2019: Theoretical Biophysics, lecturer
- July 2019, Dresden MPIKS, International Focus Workshop on Granular and Particulate Networks
- June 2019, Caltech, Engineering Mechanics Institute Conference 2019 invited talk
- May 2019, Boston University, second annual Theory of Living Systems Meeting invited talk
- April 2019, Simons Foundation NY, Conference on Theory and Biology, “Living flows”
- April 2019, Princeton University Chemical and Biological Engineering departmental seminar, “Mapping the topology of tuned complex systems”

- March 2019, Michigan, Complex Systems Seminar, “Confined curved shells and their elaborate conformations”
- March 2019, Michigan, Quantitative Biology seminar, “Pattern formation and self-organization in biological flows”
- February 2019, Princeton University, Biophysics seminar
- November 2018, Courant NYU, Applied Math seminar, “Self-organization in biological transport networks”
- November 2018, Rice University, Center for Theoretical Biological Physics seminar
- October 2018, University of Pennsylvania Computational Neuroscience Initiative seminar, “Self-organization in biological transport networks”
- October 2018, University of Pennsylvania PICS symposium, “Exploiting the topography of energy landscapes for the tuning of complex systems”
- July 2018, Kloster Seeon, Germany International Conference on "Key Challenges in Biophysics", “The physics of flow networks”
- July 2018, Portland, Oregon 2018 SIAM Conference on Mathematical Aspects of Materials Science, “Elastic instabilities in floating shells”
- June 2018, Rice University 12-th Q-bio conference, “When things go wrong: a breakdown of breakdowns in optimally resilient vascular networks”
- May 2018, Penn Physiology, “Vascular networks: a physicist’s perspective”
- May 2018, UMass Amherst, UMass Summer School on Complex Fluids and Soft Solids, Lecturer, “Physical Networks”
- May 2018, Pisa, Italy Universe 2.0, “Textures in nature”
- May 2018, Fields Institute, Toronto Workshop Modeling biological phenomena from nano to macro scale, “A “use-it-or-lose-it” model for the development of vascular networks”
- April 2018, University of New Mexico, Physics and Astronomy colloquium, “The spectrum of efficient venation phenotypes”
- March 2018, Lehigh University Physics colloquium
- January 2018, Harvard University Department of Physics colloquium, “The spectrum of efficient venation phenotypes”
- December 2017, University of Athens, Greece, “Elastic instabilities in floating shells”
- October 2017, University Paris Diderot, France, “Detangling the vascular web: Loops, hierarchies and the quest for Nature’s design principles”
- June 2017, Aspen Center for Physics colloquium, “The phenotypes of flow: Functional archetypes and the development of distribution networks in biology”
- May 2017, Princeton University Complex Fluids and Soft matter workshop, “Fluid flows in complex networks”
- April 2017, Boston University, Physics colloquium, “Detangling the vascular web: Loops, hierarchies and the quest for Nature’s design principles”
- March 2017, MIT, Applied Math, Physical Mathematics Seminar, “The structure and dynamics of adaptive vascular networks”
- March 2017, New Orleans, APS March meeting, invited talk, “Gaussian curvature and confinement in thin shells”
- April 2016, Swarthmore college, American Society of Plant Biologists-MAS Spring meeting, “The optimality of vascular networks”
- March 2016, KITP Santa Barbara public talk to the "Friends of the KITP," public talk: “Detangling the vascular web: Loops, hierarchies and the quest for Nature’s design principles”
- February 2016, Emory, Seminar Series on Quantitative Biology and Theoretical Biophysics
- January 2016, NIH, Bethesda, MD 16th Mid-Atlantic Soft Matter Workshop, “The evolution of efficient fluid flow”
- January 2016, University of Pennsylvania Workshop on Algebraic and Topological Methods for Biological Networks, Warren Center, “Topological fingerprints of biological distribution networks”
- January 2016, Purdue, Biophysics seminar at the department of Physics

- January 2016, Durham, NC Dynamics days 2016, "Emerging hierarchies in biological distribution networks"
- January 2016, University of Chicago, Computations in Science seminar
- December 2015, Princeton University, "Emerging hierarchies in biological distribution networks"
- October 2015, Women in Applied Math and Soft Matter Physics, Mainz, Germany, "Modeling and characterization of dynamically adapting webs"
- June 2015, 20th Claude Itzykson conference: Random surfaces and Random Geometry, "Extracting hidden hierarchies in weighted distribution networks"
- November 2014, Dortmund, Germany, "Large scale deformations of curved shells"
- September 2014, Niels-Bohr Institute, Copenhagen, Denmark, Workshop Rhythms in Complex Networks: Theory Meets Experiment, "Structural self assembly in locally adaptive networks"
- May 2014, Bayreuth, Germany, "Deciphering the topology of planar networks"

## Service

---

### Departmental and University wide.....

- IRG1 co-lead for upcoming renewal.
- University of Pennsylvania's Fellowships Faculty Review Committee (CURF) (2022-2023)
- Search committee for a new Science Outreach Initiative Director (Spring and Summer of 2022)
- Undergraduate Chair (Fall 2022-)
- Condensed matter seminar organizer Spring 2022
- Biophysics subcommittee (sub-committee of the undergraduate committee), 2021-2022
- Diversity committee (2019-2022)
- Website redesign committee (2019-2020)
- Soft Matter experiment search committee 2019-2020
- Math+X (mathematics+biology) Calabi Simons Chair search committee 2018-2019 (SAS committee).
- Computational astronomy/astrophysics search committee 2017-2018.
- Faculty Panelist for the University's disciplinary system 2018-2019 (University wide committee)
- Colloquium committee 2015-2016, 2018-2019
- Biophysics committee (sub-committee of the undergraduate committee)
- Undergraduate committee, 2018-2019
- I overhauled and run the condensed matter group activities for the prospective student visiting day (2018)
- Astrophysics hire search committee (2017-2018)
- Graduate admissions committee 2015-2017
- Condensed matter seminar organizer, 2015

### Workshops organized.....

- Co-organizing Biophysics Summer school, August 2023, Crete, Greece
- BIRS 2023 workshop at BIRS-CMO, Oaxaca "Formation of Looping Networks - from Nature to Models ", (co-organized with S. Douady and A. Cornelissen), approved for April 23-28, 2023, rescheduled for 2024
- Boulder summer school for condensed matter Physics (co-organized with Xiaoming Mao and Ian Tobasco), approved for July 6 - 31, 2026
- mini-symposium, SIAM meeting at Bilbao May 2020 (postponed to 2021)
- mini-symposium, SIAM meeting at Snowbird May 19-23 2019
- APS march meeting sessions
- Aspen Center for Physics Summer Workshop, titled "The packing of continua", (co-organizer) June 11-30th, 2017
- Kavli Institute for Theoretical Physics 3 month program titled "Geometry, elasticity, fluctuations, and order in 2D soft matter" (co-organizer), KITP, Santa Barbara, January 2016-March 2015

## Miscellaneous.....

- APS wide committee for informing the public (CIP), January 1, 2020 through December 31, 2023
- Taught at the UPenn Physics and Astronomy summer school (summer 2020).
- Taught at APS short course on Topological Data Analysis (March 2021)
- Organized invited session at the virtual APS March meeting
- Taught UMass Amherst summer school for soft matter physics (May 2018), will be teaching at Boulder Summer school for condensed matter physics (July 2019)
- DSOFT member at large (2017-2021)
- Outreach: Penn LENS program, female highschoolers from underrepresented minorities spent summers in my lab
- NSF grant review panelist, Simons, Sloan grant reviews
- Reviewer for several journals: Phys Rev Lett, PNAS, PLoS Computational Biology, Phys Rev E, Microfluidics and Nanofluidics, Proc Royal Soc B, Soft Matter, Scientific Reports, Journal of Physics D, etc
- Editor PLOS 1, Sci Reports
- Seminar organizer at Rockefeller University center for Studies in Physics and Biology (2009-2010)

## Current support

---

- Simons Investigator (\$500,000, 2018-2023)
- University of Pennsylvania MRSEC Seed Grant, National Science Foundation, (\$80,000, 2018-2021)
- University of Pennsylvania MRSEC Seed Grant, National Science Foundation, "Materials from Disordered Bicontinuous Aperiodic Networks (D-BANs)", (\$20,000, 2020-2023)
- "Programming multistable origami and kirigami structures via topological design", Army Research Office (Total Award Amount (including Indirect Costs): \$616,307, 2022-2027)

## Past support (recent)

---

- NSF IOS-1856587, "The hydraulic legacy of C4 evolution in the grasses: Phylogenetic, physiological and genetic controls on water transport". (total \$858,571, co-PI with own portion of the award \$306,000, 2019-2022)
- National Science Foundation Career Award, "CAREER: Flow, failure, fluctuations and the topology of vascular networks.", (\$884,077, 2016-2021)
- Center for Engineering Mechanobiology Seed Grant, (\$40,000, 2019)
- Burroughs Wellcome Fund, Career Award at the Scientific Interface, "Robustness and optimality in loopy biological distribution networks" (UPenn portion of award \$430,000, 2015-2018)
- University of Pennsylvania MRSEC Seed Grant, National Science Foundation, "Exploring Surface Textures in Terrestrial Life for Novel Water Managing Materials", \$40,000 (2014-2017)

## Student mentoring

---

### PhD Student advising.....

- Aaron Winn
- Georgios Gounaris
- Tatyana Gavrilchenko (graduated May 2020, currently post-doctoral fellow at Flatiron)
- Johannes Grawer (graduated May 2017, currently at COMSOL)
- Henrik Ronellenfitch (graduated 2016, currently faculty at Williams College)

## Undergraduate Students.....

- Joshua Anumolu (2022-)
- Evan Qiang (2022-)
- Arnav Lal (2022-2023)
- Jurti Telushi, September 2021-
- Leo Chambers, March 2020-December 2021
- Mija Jovchevska, August 2019-December 2021
- Adam Konkol (Vagelos Scholar, GoldWater Scholarship, Dean's Scholar, Churchill Fellow), October 2018-June 2021
- Claire Dore (intern from EP, France), summer 2018
- Andrew Roberts, 2017
- Ella Bei (CURF) summer 2017
- Curie Shim (CURF) summer 2017
- Tarmily Wen (CURF) summer 2015
- Shawn Ong (CURF) summer 2015
- *at MPI, 2013-2015*: Jana Lasser, Fabian Steuer, Torsten Eckstein, Stephan Monecke

## Thesis committees.....

- Sanghoong Chong (Yodh) 2022
- Emile Kraus (Sweeney) thesis committee, defense on November 19, 2021
- Maria Munoz (Yoichiro Mori), thesis committee, defense on June 29, 2021
- Helen Ansell (Kamien), thesis committee, defense on April 2021
- Killian Yung-Chien Chou (Drndic), oral exam April 2021
- Emily Benson (Yodh), oral exam January 2021
- Lia Papadopoulos, thesis title "Exploring relationships between structure, dynamics and the effects of local perturbations in networks", (Bassett), 2020
- Paul Valcke, thesis title "Form, Formation, Deformation of *Gorgonia ventalina*", (Stephan Douady, University Paris Diderot), 2020
- Nandita Chaturvedi (Randall Kamien) 2020
- Paul Mahish Das (Drndic)
- Christopher Lynn (Bassett)
- Charlotte Pfeiffer (Dennis Discher) 2020
- Maria Munoz Lopez (Yoichiro Mori, 2020, oral exam)
- Jason Rocks (Andrea Liu) 2019
- Ju Harang (Danielle Bassett) 2019
- Dillion Fox (Alison Sweeney) 2019
- Asja Radja, thesis title "Surface patterns on single cells: a consequence of a phase transition to modulated phases" (Alison Sweeney) 2019
- Lia Papadopoulos (Danielle Bassett) 2018
- Chen-Chi Francis Chien, thesis title "Improving signal to noise ration and time resolution for solid-state nanopore measurements" (Marija Drndic) 2018
- Emile Kraus (Alison Sweeney) 2017
- John Briguglio , thesis title "Understanding the implications of neural population activity of behavior" (Maria Geffen and Vijay Balasubramanian) 2016
- Tom Dodson (Alison Sweeney) 2015
- Carl Goodrich, thesis title "Unearthing the anti crystal,: Criticality in the linear response of disordered solids" (Andrea Liu) 2015

## Other advising.....

- Worked closely with Jason Rocks (2017-2019 Advised by Andrea Liu)

- Rotation student: Connor Brennan (2017-2018)

#### Post-doctoral associates.....

- *UPenn* current: Sean Fancher, Purba Chatterjee (50% with A. Liu)
- *UPenn* past: Yongtian Luo, Shashank Markande, Desislava Todorova, Brian Chen, Miguel Ruiz-Garcia (currently faculty at Universidad Politécnica de Madrid, co-supervised with Andrea Liu)
- *MPI*: Jonathan Dawson, Octavio Albarran (co-supervised with L. Goehring)

## Publications, refereed

---

1. Yongtian Luo, Che-Ling Ho, Brent R. Helliker, Eleni Katifori, “Flow network controlled shape transformation of a thin membrane through differential fluid storage and surface expansion”, *Physical Review E* 107, 024419 (2023) (editor’s suggestion)
2. Ian Tobasco, Yousra Timounay, Desislava Todorova, Graham C. Leggat, Joseph D. Paulsen, E. Katifori, “Exact solutions for the wrinkle patterns of confined elastic shells”, *Nature Physics* 18, pages1099–1104 (2022) (cover art)
3. Adam Konkol, Jon Schwenk, Eleni Katifori, John Shaw, “Tidal forces are a determinant of island formation in river deltas”, *Geophysical research letters*, 49, e2022GL098284 (2022)
4. Fancher S, Katifori E. “Mechanical response in elastic fluid flow networks”. *Physical Review Fluids*. 7:1 (2022)
5. Luo Y, Ho C, Helliker B, Katifori E. “Leaf Water Storage and Robustness to Intermittent Drought: A Spatially Explicit Capacitive Model for Leaf Hydraulics”. *Frontiers in Plant Science*. 12: (2022)
6. Tatyana Gavrilchenko, E. Katifori, “Distribution networks achieve uniform perfusion through geometric self-organization”, *Phys. Rev. Lett.* 127, 078101 (2021)
7. Miguel Ruiz-Garcia, Eleni Katifori, “Emergent dynamics in excitable flow systems”, *Phys. Rev. E* 103, 062301 (2021)
8. Jason W. Rocks, Andrea J. Liu, Eleni Katifori, “Hidden topological structure of flow network functionality”, *Phys Rev Lett* 126 (2), 028102 (2021)
9. Irina Kneuper, William Teale, Jonathan Dawson, Ryuji Tsugeki, Eleni Katifori, Klaus Palme, and Franck A Ditengou, “Auxin biosynthesis and cellular efflux act together to regulate leaf vein patterning”, *to appear at Journal of Experimental Botany* (2020)
10. Jason W. Rocks, Andrea J. Liu, Eleni Katifori, “Revealing structure-function relationships in functional flow networks via persistent homology”, *Physical Review Research* 2, 033234 (2020)
11. Miguel Ruiz-Garcia, Andrea J. Liu, Eleni Katifori, “Tuning and jamming reduced to their minima” *Phys Rev E* 100 (5), 052608 (2019)
12. H. S. Ansell, D. S. Kim, R. D. Kamien, E. Katifori, T. Lopez-Leon, “Threading the spindle: a geometric study of chiral liquid crystal polymer microparticles”, *Phys Rev Lett* 123 (15), 157801 (2019)
13. H. Ronellenfitch and E. Katifori. “Phenotypes of vascular flow networks”. *Phys Rev Lett* 123 (24), 248101

(2019)

14. T. Gavrilchenko and E. Katifori "Resilience in hierarchical fluid flow networks", *Phys Rev E* 99, 012321 (2019)
15. J. Rocks, H. Ronellenfitch, S. Nagel, A. Liu and E. Katifori, "The limits of multifunctionality in tunable networks", *PNAS*, 201806790 (2019) 6 pages
16. E. Katifori, "The transport network of a leaf". *Comptes Rendus Physique*, 19(4) (2018)
17. Lia Papadopoulos, Pablo Blinder, Henrik Ronellenfitch, Florian Klimm, Eleni Katifori, David Kleinfeld, and Danielle S. Bassett, "Comparing two classes of biological distribution systems using network analysis", *PLoS Comput Biol* 14(9): e1006428. (2018)
18. Gräwer J., Ronellenfitch H., Mazza Marco G. and Katifori E., "A trophallaxis inspired model for distributed transport between randomly interacting agents", arXiv: 1607.06055, *Phys. Rev. E* 96, 022111 (2017) 16 pages
19. Hillel Aharoni, Desislava V. Todorova, Octavio Albarran, Lucas Goehring and Randall D. Kamien, Eleni Katifori, "The Smectic Order of Wrinkles", *Nature Comm*, 15809 (2017)
20. Ronellenfitch, H, Katifori, E. "Global optimization, local adaptation and the role of growth in distribution networks", *Phys Rev Lett* 117 138301, (Editor's Choice, cover of PRL), (2016)
21. Lasser, J, Katifori E., "NET: A framework for the vectorization and examination of network data", *Source Code for Biology and Medicine*, 12:4 (2017).
22. Modes C. D., Magnasco M.O., and Katifori E., "Extracting Hidden Hierarchies in 3D Distribution Networks", *Phys Rev X*, 6 031009, (2016)
23. Henrik Ronellenfitch, Jana Lasser, Douglas Daly, Eleni Katifori, "Topological Phenotypes Constitute a New Dimension in the Phenotypic Space of Leaf Venation Networks". *PLOS Comput Biol* 11, e100. (2015)
24. Ronellenfitch H., Liesch J., Jensen K. H., N. Holbrook M., Schulz A., and Katifori E.\*, "Scaling of phloem structure and optimality of photoassimilate transport in conifer needles", *Proc Royal Soc B*, 282(1801), 20141863 (2015)
25. Grawer J., Modes C. D., Magnasco M. O., Katifori E., "Structural Self-Assembly and Avalanchelike Dynamics in Locally Adaptive Networks", *PRE*, 92, 012801, (2015)
26. Manik D., Witthaut D., Schafer B., Matthiae M., Sorge A., Rohden, Katifori E., and Timme M., "Supply networks: Instabilities without overload", *Eur Phys J Special Topics*, 223(12), 2527 (2014)
27. Couturier, E., Dumais, J., Cerda, E. and Katifori, E. "Folding of an opened spherical shell." *Soft Matter*, 9, 8359, (2013)
28. Jordan D., Kuehn S., Katifori E., and Leibler S., "Behavioral diversity in microbes and low- dimensional phenotypic spaces", *PNAS*, 110(34), 14018-23 (2013)
29. Katifori, E., Pastras, G. "Thermal evolution of the non-supersymmetric metastable vacua in  $N=2$   $SU(2)$  SYM softly broken to  $N=1$ ", *Journal of High Energy Physics*, 5: 142 (2013)

30. Katifori E. and Magnasco M.O., "Quantifying loopy network architectures", *PLoS ONE*, 7, e37994 (2012)
31. Papachristou P.K., Katifori E., Diakonou F.K., Constantoudis V. and Mavrommatis E., "Quantum versus classical dynamics in a driven barrier: The role of kinematic effects", *PRE* 86, 036213 (2012)
32. Schroll Robert D. , Katifori E., and Davidovitch Benny, "Elastic building blocks for confined sheets", *PRL* (cover image), 106, 074301 (2011)
33. Katifori E., Szöllösi G. J. and Magnasco M. O., "Damage and fluctuations induce loops in optimal transport networks" ,*PRL* (cover image) 104, 048704 (2010)
34. Katifori E., Alben S., Cerda E., Nelson D. R. and Dumais J., "Foldable Structures and the Natural Design of Pollen Grains", *PNAS* (cover image) 107, 7635-7639 (2010)
35. Katifori E., Alben S. and Nelson D. R., "Collapse and folding of pressurized rings in two dimensions", *PRE* 79, 056604 (2009)
36. Katifori E. and Nelson D. R., "Effects of kinked linear defects on planar flux line arrays", *EPJB* 59, 319-327 (2007)
37. Katifori E. and Nelson D. R., "Vortex pinning by meandering line defects in planar superconductors", *PRB* 73, 214503 (2006)

**Manuscripts (submitted and available as pre-prints)**.....

- Alejandro Martinez-Calvo, Matthew D Biviano, Anneline Christensen, Eleni Katifori, Kaare H. Jensen, Miguel Ruiz-Garcia, "The fluidic memristor: collective phenomena in elastohydrodynamic networks", arXiv:2303.10777 (submitted)
- Sean Fancher, Eleni Katifori, "Tradeoffs between energy efficiency and mechanical response in fluid flow networks.", arXiv:2102.13197 (submitted)
- Purba Chatterjee, Sean Fancher, Eleni Katifori, "Pulsatile Driving Stabilizes Loops in Elastic Flow Networks", arXiv:2210.06557 (submitted)
- A Winn, A Konkol, E Katifori, "From localized to well-mixed: How commuter interactions shape disease spread", arXiv preprint arXiv:2303.04490
- Georgios Gounaris, Eleni Katifori, "A Braess' paradox analog in physical networks of optimal exploration", arXiv:2303.02146
- Ramaswamy, M., Griniasty, I., Liarte, D. B., Shetty, A., Katifori, E., Del Gado, E., Sethna, J. P., Chakraborty, B. and Cohen, I. "Universal scaling of shear thickening transitions", arXiv:2107.13338 (under review)
- Giorgos Gounaris, Miguel Ruiz-Garcia, Eleni Katifori, "Distribution efficiency and structure of complex networks." arXiv:2111.04657
- Winn, A. and Katifori, E. "Operating Principles of Peristaltic Pumping through a Dense Array of Valves", arXiv:2111.11413

- Smith, M., Fracchiolla, C., Fleming, S., Dominguez, A., Lau, A., Greco, S., Lincoln, D., Katifori, E., Ratcliff, W., Longobardi, M., Murdock, M. and Ishak, M. "Informal Science Education and Career Advancement", arXiv:2112.10623
- Miguel Ruiz-Garcia, Eleni Katifori, "Topologically controlled emergent dynamics in flow networks", arXiv:2001.01811
- O. Albarran, D. Todorova, E. Katifori, L. Goehring, "Curvature controlled pattern formation in floating shells", arXiv:1806.03718

Other work.....

- E Katifori, "Hairs and pores in low-Reynolds-number flows", Journal club for condensed matter physics, DOI: 10.36471/JCCM\_October\_2020\_03  
[https://doi.org/10.36471/JCCM\\_October\\_2020\\_03](https://doi.org/10.36471/JCCM_October_2020_03)
- MA Porter, M Feng, E Katifori, "The topology of data", Physics Today 76, 1-36