# JINGHUI LIU

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## EMPLOYMENT

**Max Planck Institute for Physics of Complex Systems (PKS) | Cell Biology and Genetics (CBG)** — Dresden SN, DE
ELBE Postdoctoral Fellow, Center for Systems Biology Dresden (CSBD) — 2022 – 2025

## EDUCATION

**Massachusetts Institute of Technology** — Cambridge MA, US
Doctor of Philosophy in Physics — Sep. 2022
(*Thesis: "Topology, Symmetry and Mechanics: Deciphering and Controlling information flows in a living cell". Advisor: Nikta Fakhri)

**Peking University** — Beijing, China
Bachelor of Science in Physics — Jul. 2016
(*Thesis: "A dynamical network analysis in epithelial-mesenchymal transition signaling behaviors". Advisor: Qi Ouyang)

## SELECTED AWARDS AND HONORS

- **SFI Complexity Postdoctoral Fellowship**, Santa Fe Institute *(declined)* — Jan. 2022
- Women Interactive Materials Award (WIMA) 2nd Place, DWI-Leibniz Institute — Oct. 2021
- MathWorks Science Fellowship — 2021 – 2022
- **Rising Star Award** in Soft and Biological Matter, UChicago Materials Research Center — Oct. 2020
- Student Speaker Award Finalist, GSNP (Topical Group on Statistical and Nonlinear Physics), APS — Mar. 2020
- **Morton E. Goulder Presidential Fellowship**, Department of Physics, MIT — 2016 – 2017
- Wusi Scholarship, Peking University — 2014 – 2015, 2015 – 2016
- Weiming Scholarship for Outstanding Undergraduate Research, Peking University — 2013 – 2014
- Ke-chi Shen Scholarship, Peking University — 2012 – 2013

## PUBLICATIONS

- **Liu J***, Bukart T*, Ziepke A, Frey E, Fakhri N. (2022). Light-induced cortical excitability reveals programmable shape dynamics in starfish oocytes. [In preparation]
- Foster P J, Fürthauer S, **Liu J**, Fakhri N. (2022). Active mechanics of sea star oocytes. [preprint *(elder version)*]
- **Liu J**, Totz J F, Miller P W, Hastewell A D, Chao Y C, Dunkel J, Fakhri N. (2021). Topological braiding and virtual particles on the cell membrane. Proceedings of the National Academy of Sciences, 118(34). [pdf]
  American Mathematical Society (AMS) Math in the Media
- Wigbers M C*, Tan T H*, Brauns F, **Liu J**, Swartz S Z, Frey E, Fakhri N. (2021). A hierarchy of protein patterns robustly decodes cell shape information. Nature Physics, 1-7. [pdf]
  LMU News | PHYS.org
- Tan T H*, **Liu J***, Miller P W*, Tekant M, Dunkel J, Fakhri N. (2020). Topological turbulence on the membrane of a living cell. Nature Physics, 1-6. [pdf]
  Cover Article | Nature Research Highlights | Physics World Frontier | MIT News | PHYS.org
- Hoek T A, Axelrod K, Biancalani T, **Liu J**, Gore J. (2016). Resource availability modulates the cooperative and competitive nature of a microbial cross-feeding mutualism[J]. PLoS biology, 14(8). [pdf]

* Authors contribute equally to the publication

## INVITED TALKS

2021 Complexity Postdoctoral Fellow Talks, Santa Fe Institute — Virtual
2021 ELBE Colloquia, MPI-PKS and MPI-CBG — Virtual

2021 Center for the Physics of Biological Function (CPBF) Fellow Symposium, Princeton University — Princeton, NJ
2021 Women Interactive Materials Award (WIMA) Symposium, DWI-Leibniz Institute — Virtual
2021 Harvard Condensed Matter Theory Kid's Seminars — Cambridge, MA
2020 UChicago Rising Stars in Soft and Biological Matter Symposium — Virtual
2020 APS March Meeting (online), GSNP Speaker Award Session — Virtual
2019 Universality: Turbulence Across Vast Scales, Flatiron Institute [video] — New York, NY
2019 Gordon Research Seminar on Soft Condensed Matter Physics, Colby-Sawyer College — New London, NH
2019 Theory of Living Systems Meeting, Boston University [video] — Boston, MA

* Upcoming conferences included

## CONTRIBUTED TALKS

2018 - 2023 APS March Meetings — Los Angeles, CA / Boston, MA / Virtual / Chicago, IL / Las Vegas, NV
2020 MIT Physics Departmental Special Tuesday Lunch Talk Series — Virtual
2018 Annual Biophysics Retreat, MIT — Provincetown, MA

## POSTERS

2023 Gordon Research Conference on Soft Condensed Matter Physics, Colby-Sawyer College — New London, NH
2019 Annual Biophysics Retreat, MIT (*Grand Poster Prize Winner) — Provincetown, MA
2019 Gordon Research Conference on Soft Condensed Matter Physics, Colby-Sawyer College — New London, NH
2015 Annual Biophysics Retreat, MIT — Provincetown, MA
2014, 2015 Annual Undergraduate Research Honor Program in Biology Retreat, Peking University — Beijing, China

## TEACHING AND MENTORING

**Graduate Mentor**, Undergraduate Research Opportunities Program (UROP), Ariana Park (MIT Physics)
**Rotation Mentor**, G1 Graduate Research, Lisa Lin (MIT Physics) | Yu-Chen Chao (Harvard SEAS) | Hugh Higinbotham (MIT Physics) | Sebastian T. Coupe (MIT Biology)
**Teaching Assistant**, MIT course 8.13, "Junior Lab in Experimental Physics"
Feb. 2021 – May. 2021 — Cambridge, MA
**Teaching Assistant**, MIT course 8.241, "Introduction to Biological Physics"
Feb. 2020 – May. 2020 — Cambridge, MA

## SERVICES

Departmental **Advising Resources for Easing Friction and Stress** (REFS), MIT Physics
2019 – 2021 — Cambridge, MA
Residential Chair, Edgerton Graduate Housing Committee
2017 – 2019 — Cambridge, MA
Volunteer Service Team Leader, School of Physics, Peking University
Jan. 2013 – Oct. 2013 (*Volunteer Service Award in Dec. 2013) — Beijing, China

## REFERENCES

Nikta Fakhri | fakhri@mit.edu | Thomas D. and Virginia W. Cabot Career Development Associate Professor of Physics, Massachusetts Institute of Technology
Jörn Dunkel | dunkel@mit.edu | Professor of Mathematics, Physical Applied Mathematics Robert E Collins Distinguished Scholar, Massachusetts Institute of Technology
Mehran Kardar | kardar@mit.edu | Professor of Physics, Massachusetts Institute of Technology
Jeff Gore | gore@mit.edu | Professor of Physics, Massachusetts Institute of Technology
Hazel Sive | h.sive@northeastern.edu | Professor Emerita, Massachusetts Institute of Technology; Dean of Science, Northeastern University
Qiongyi He | qiongyihe@pku.edu.cn | Professor of Physics, Peking University