

Bernardo Gouveia

PhD Candidate

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[Website](#)
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EDUCATION

- Princeton University** 2017 - 2023
Department of Chemical and Biological Engineering
Thesis: *Biophysics of spindle assembly and microtubule associated condensates*
Advisers: Howard A. Stone and Sabine Petry
- University of California, Berkeley** 2013 - 2017
Department of Chemical and Biomolecular Engineering
B.S. in Chemical Engineering (High Honors), Minor in Physics
Advisers: Susan J. Muller and Kranthi K. Mandadapu

AWARDS AND HONORS

- Wallace Memorial Honorific Fellowship 2022
- Graduate School Teaching Award 2022
- Princeton Biomolecular Condensate Initiative Grant (\$100k, 2 years) 2020
- SABIC Best General Examination Award 2019
- Paul and Daisy Soros Fellowship for New Americans 2017
- National Science Foundation Graduate Research Fellowship 2017
- Princeton President's Fellowship 2017
- California Alumni Association Leadership Scholarship 2013

PUBLICATIONS (*equal contribution)

1. **B. Gouveia***, S. U. Setru*, M. R. King, H. A. Stone, J. W. Shaevitz and S. Petry, Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes, accepted at *Nature Communications*, 2023.
2. **B. Gouveia**, H. A. Stone, S. Petry, The mitotic spindle as active machinery, *Out-of-Equilibrium Soft Matter: Active Fluids*, Chapter 6, Royal Society of Chemistry, 2023. m
3. **B. Gouveia** and S. Petry, +TIPs condense on microtubule plus-ends, *Nature Cell Biology*, 25, 12-14, 2023.
4. **B. Gouveia***, Y. Kim*, J. W. Shaevitz, S. Petry, H. A. Stone and C. P. Brangwynne, Capillary Forces Generated by Intracellular Biomolecular Condensates, *Nature*, 609, 255-264, 2022.
5. **B. Gouveia** and H. A. Stone, Perturbing ordinary differential equations to generate resonant and repeated root solutions, *SIAM Review*, 64, 485-499, 2022.
6. S. U. Setru*, **B. Gouveia***, R. Alfaro-Aco, J. W. Shaevitz, H. A. Stone and S. Petry, A hydrodynamic instability drives protein droplet formation on microtubules to nucleate branches, *Nature Physics*, 17, 493-498, 2021.
7. J.B. Dahl, V. Narsimhan, **B. Gouveia**, S. Kumar, E. S. G. Shaqfeh and S. J. Muller, Experimental observation of the asymmetric instability of intermediate-reduced-volume vesicles in extensional flow, *Soft Matter*, 12, 3787-3796, 2016.

CONFERENCES AND PRESENTATIONS

1. Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes in *Xenopus* egg extract, *Boston Area Mitosis and Meiosis Meeting*, Yale University, New Haven, United States, **invited**, 2023.
2. Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes in *Xenopus* egg extract, *ASCB Cell Bio Meeting*, Washington D.C., United States, 2022.
3. Biophysics of spindle assembly and microtubule associated condensates, *National ChE Future Faculty Seminars*, Virtual, **invited**, 2022.
4. Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes in *Xenopus* egg extract, *Martin Beck Group Meeting*, Max Plank Institute for Biophysics, Virtual, **invited**, 2023.
5. Biophysics of spindle assembly and microtubule associated condensates, *Max Plank Institute for the Physics of Complex System*, Dresden, Germany, **invited**, 2022.
6. Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes, *EBMO EBML Symposium: Microtubules: From Atoms to Complex Systems*, EMBL, Heidelberg, Germany, 2022.
7. Building the microtubule cytoskeleton via phase transitions, *American Society of Biochemistry and Molecular Biology Annual Meeting*, Philadelphia, United States, **invited**, 2022.
8. Acentrosomal spindles assemble from branching microtubule nucleation near chromosomes, *APS March Meeting*, Chicago, United States, 2022.
9. Capillary phenomena involving microtubules and condensed proteins, *Phase Behavior in Soft and Living Matter Joint Meeting*, Princeton University, Princeton, United States, **invited**, 2021.
10. Capillary phenomena involving microtubules and condensed proteins, *National ChE Future Faculty Seminars*, Virtual, **invited** 2021.
11. A hydrodynamic instability drives protein droplet formation on microtubules to nucleate branches, *65th Biophysical Society Annual Meeting*, Virtual, 2021.
12. A hydrodynamic instability drives protein droplet formation on microtubules to nucleate branches, *73rd Annual Meeting of the APS Division of Fluid Dynamics*, Virtual, 2020.
13. A hydrodynamic instability drives protein droplet formation on microtubules to nucleate branches, *Princeton Biomolecular Condensate Initiative Internal Virtual Mini-symposium*, Princeton University, Virtual, **invited**, 2020.
14. Mean field organization of branching microtubules, *International Meeting of the Physics of Living Systems Student Research Network*, Max Plank Institute for Biochemistry, Munich, Germany, 2019.
15. Driving forces for microtubule transport in the mitotic spindle, *71st Annual Meeting of the APS Division of Fluid Dynamics*, Atlanta, United States, 2018.
16. Extensional rheology at Bolt Threads, *Susan J. Muller Group Meeting*, UC Berkeley, Berkeley, United States, **invited**, 2016.

TEACHING AND MENTORING

- Princeton MOL 504, Biochemistry and Cell Biology I, Guest Lecturer Fall 2021
- Princeton EGR 156, Multivariable Calculus, Assistant in Instruction Fall 2021
- Princeton MAE 305, Mathematics in Engineering I, Assistant in Instruction Fall 2018, 2019
- Average student rating: 4.7/5.0

- Selected student comments:
 - “Bernardo was an excellent preceptor! He clearly knew what he was doing and was always able to answer my questions, and he also clearly cared about making sure his students understood the material.”
 - “Precepts were absolutely amazing! Bernardo explained things with incredible precision and clarity! I have never experienced such an amazing precept where I go in slightly confused about the week’s topic and come out fully understanding everything!”
 - “Bernardo is, without a doubt, the best preceptor I’ve had at Princeton. His commitment to building students’ intuition in a course whose content can be riddled with formulas was incredible, and he teaches in a way that is almost universally digestible.”
- Undergraduate student advising:
 - Rebekah Adams, *Stochastic simulation of microtubule networks*, 9/2019 - 5/2021. Currently pursuing PhD at Carnegie Mellon in Mechanical Engineering.
 - Shrikeshav Deshmukh, *Microrheology of biomolecular condensates*, 6/2019 - 9/2019.

INDUSTRY EXPERIENCE

Bolt Threads Inc. 2015 - 2016
Materials Research Intern
 Lead Scientist: Lindsay Wray

OUTREACH

Berkeley Engineers and Mentors (BEAM) 2013 - 2017
President, Site Coordinator, Site Leader, Mentor
[Website](#)

SKILLSET

- **EXPERIMENTAL:** Fluorescence Microscopy (TIRF, Confocal, Epi), Atomic Force Microscopy (Bio), Electron Microscopy (Negative Stain), Protein Purification, *Xenopus* Egg Extract Preparation, Shear and Extensional Rheology
- **COMPUTATIONAL:** Python, Matlab, C++, Bash, FIJI/ImageJ, GROMACS, Cytosim, L^AT_EX/Overleaf, Microsoft Office Suite, Adobe Illustrator
- **THEORETICAL:** Biophysics, Soft Matter Physics, ODEs/PDEs, Asymptotics