John D. (Jack) Treado

Nöthnitzer Str. 38
Office 1.A.07
01187 Dresden
Germany

email: treado@pks.mpg.de
github: github.com/jacktreado
Google Scholar: John D. Treado
website: jacktreado.github.io

Research Interests

Soft condensed matter · Biological physics · Disordered systems · Computational physics

Current position

2022 – *Visiting postdoc*, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

Education

2022 Ph. D. in Engineering & Applied Sciences, Yale University
Thesis Advisor: Prof. Corey O'Hern

2016 B.S. in Physics, *magna cum laude*, Georgetown University
Thesis Advisor: Prof. Peter Olmsted

Publications

JDT, A. B. Roddy, G. Théroux-Rancourt, C. Ambrose, C. Brodersen, M. D. Shattuck, and C. S. O'Hern, "Localized growth and remodelling drives spongy mesophyll morphogenesis," *J. R. Soc. Interface* **19**, 20220602 (2022).

Y. Cheng, **JDT**, B. Lonial, P. Habdas, E. R. Weeks, M. D. Shattuck, and C. S. O'Hern, "Hopper flows of deformable particles," *Soft Matter* **17**, 8071 (2022).

D. Wang, **JDT**, A. Boromand, B. Norwick, M. P. Murrell, M. D. Shattuck, and C. S. O'Hern, "The structural, vibrational, and mechanical properties of jammed packings of deformable particles in three dimensions," *Soft Matter* **17**, 9901–9915 (2021).

JDT*, D. Wang*, A. Boromand, M. P. Murrell, M. D. Shattuck, and C. S. O'Hern, "Bridging particle deformability and collective response in soft solids," *Phys. Rev. Materials* **5**,

055605 (2021).

A. T. Grigas, Z. Mei, **JDT**, Z. A. Levine, L. Regan, and C. S. O'Hern, "Using physical features of protein core packing to distinguish real proteins from decoys," *Protein Science* **29**, 1931 (2020).

Z. Mei*, **JDT***, A. T. Grigas, Z. A. Levine, L. Regan, and C. S. O'Hern, "Analyses of protein cores reveal fundamental differences between solution and crystal structures," *Proteins: Structure, Function, and Bioinformatics* **88**, 1154 (2020).

JDT, Z. Mei, L. Regan, and C. S. O'Hern, "Void distributions reveal structural link between jammed packings and protein cores," *Phys. Rev. E* **99**, 022416 (2019).

C. Oi, **JDT**, Z. A. Levine, C. S. Lim, K. M. Knecht, Y. Xiong, C. S. O'Hern, and L. Regan, "A threonine zipper that mediates protein-protein interactions: Structure and prediction," *Protein Science* **27**, 1969 (2018).

* denotes equal contribution

Talks

Invited

2022 WWTF annual Meeting, Universität Wien, *Vienna, Austria.* June 2022

2021 APS March Meeting, *Virtual.* March 2021
Physics of Living Systems (PoLS) Seminar, *Virtual.* January 2021

2020 APS March Meeting, *Denver, CO (cancelled due to COVID-19).* March 2021

2019 4th International Conference on Packing Problems, *New Haven, CT.* June 2019

Contributed

2022 APS March Meeting, *Chicago, IL.* March 2022

2019 Yale Physical and Engineering Biology (PEB) retreat, *New Haven, CT.* October 2019
APS March Meeting, *Boston, MA.* March 2019

2018 PoLS Annual Meeting, Rice University, *Houston, TX.* July 2018
Northeastern Granular Materials Workshop, *New Haven, CT.* June 2018
APS March Meeting, *Los Angeles, CA.* March 2018

2017 APS March Meeting, *New Orleans, LA.* March 2017

Contributions to funded proposals

2021 *NSF PHY-2102789*, "Modeling the Structural and Mechanical Properties of Tissue During Zebrafish Tailbud Elongation." Duration: 09-15-2021 to 08-31-2025

2020 *NSF CMMI-2029756*, "Biological Self Assembly: Tissue Mechanics of the Spongy Mesophyll in Flowers." Duration: 11-01-2020 to 10-31-2023

NSF CBET-2002782, "Collaborative Research: Experimental and Computational Studies of Flow and Clogging of Deformable Particles under Confinement." Duration: 05-15-2020 to 04-30-2023

Honors & Awards

2020 Yale Mechanical Enginering & Materials Science Goodyear Tire & Rubber Fellow
2018 Excellence in Poster Presentation, Granular Matter Gordon Research Seminar, *Stonehill College, MA*
2016 Georgetown University Physics Department Undergraduate Research Award
Paul A. Treado Medal
Honors in Physics

Professional Activites

2020 Organizer, Physics of Living Systems student research conference, *postponed due to COVID-19*
2019 Selected participant, Beg Rohu Summer School. St. Pierre Quiberon, France.
Selected participant, Center for Physics of Biological Function symposia. New York, NY.
Public science publication, "Protein Folding: Nature's Rubik's Cube," *Hartford Courant*. May 2019
2019 Co-founder, Yale BioSoftMatter journal club
2019 Research mentor, Yale Physical Engineering Biology REU
2018 Public lecture, "Finding Patterns in Chaos: How Simple Rules Form Complex Behaviors," *Yale Science Diplomats*. Spring 2018

Teaching

Yale University

2021 PHYS 099: Intro to Research Methods, Teaching Assistant. Spring.
2020 MENG 383: Dynamics, Teaching Assistant. Fall.
MENG 472: Special Projects, Teaching Assistant. Spring.
PHYS 099: Intro to Research Methods, Teaching Assistant. Spring.
2019 ENAS 991: Integrated Workshop, Teaching Assistant. Fall.

ENAS 130: Introduction to Computing for Engineers and Scientists, Teaching Assistant. Spring.

2018 ENAS 991: Integrated Workshop, Teaching Assistant. Fall.

2017 ENAS 991: Integrated Workshop, Teaching Assistant. Fall.