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**Steven Tarr**

Graduate Student

School of Physics

Georgia Institute of Technology

**I. Earned Degrees**

Ph.D. (in progress) Physics 2019-present Georgia Institute of Technology, Atlanta, GA, USA (advisor: E. Alicea-Muñoz)

B.S. Cum Laude Physics 2015-2019 Brandeis University, Waltham, MA, USA (advisor: B. Chakraborty)

**II. Employment History**

2023-present Graduate Research/Teaching Assistant, Georgia Institute of Technology (advisor: E. Alicea-Muñoz)

2020-2022 Graduate Research/Teaching Assistant, Georgia Institute of Technology (advisor: D. I. Goldman)

2017-2019 Undergraduate Research Assistant, Brandeis University (advisor: B. Chakraborty)

2016 Intern, Maker Depot, LLC

2015-2019 Student Worker, Brandeis University MakerLab

2013-2015 Ambassador, Liberty Science Center

## III. Honors and Awards

2023 Recipient of CIRTL Associate Certificate from the GT Center for Teaching and Learning

2022 Awarded part of the Amelio Travel Fund from the Graduate Committee of the GT School of Physics

2021 Awarded part of the Amelio Travel Fund from the Graduate Committee of the GT School of Physics

2019 Highest Honors in Physics from Brandeis University

**IV. Research, Scholarship, and Creative Activities**

(\* next to item number indicates work done at Georgia Institute of Technology)

**A. Published Books, Book Chapters, and Edited Volumes**

**A1. Books**

No data

**A2. Refereed Book Chapters**

No data

**A3. Edited Volumes**

No data

**B. Refereed Publications and Submitted Articles**

**B1. Published and Accepted Journal Articles**

No data

**B2. Conference Presentations with Proceedings (Refereed)**

No data

**B3. Other Refereed Material**

No data

**B4. Submitted Journal Articles (with date of submission)**

Fluid surface self-propulsion via confined Hocking radiation fields, Tarr S W, Brunner J S, Soto D, Goldman D I (**submitted to Physical Review Letters** on 8 May, 2023).

**C. Other Publications and Creative Products**

Tarr S (2019) Comparing the dynamics of three types of lattice-bound active particles. Undergraduate Thesis Defense, **Brandeis University**.

**D. Presentations**

***Invited presentations at conferences:***

No data

***Invited presentations at universities & institutes:***

No data

***Contributed presentations at conferences:***

Tarr S, Brunner J, Soto D, Goldman D I (Mar 2023) Boundary-driven Surface Wave Forces from a Self-propelling Vibrating Robot Boat. Oral presentation by S. Tarr, **American Physical Society March Meeting**, Las Vegas, NV.

Diaz Cruz K, Zhong B, Tarr S, Erickson E, Goldman D I (Mar 2023) Water surface swimming dynamics via continuous contact in lightweight centipedes. Oral presentation by B. Zhong, **American Physical Society March Meeting**, Las Vegas, NV.

Diaz Cruz K, Tarr S, Zhong B, Goldman D I (Jan 2023) Water surface swimming via continuous contact in a centipede. Oral presentation by K. Diaz Cruz, **SICB Annual Meeting**, Austin, TX.

Soto D, Hwang J, Tarr S, Diaz Cruz K, Goldman D I (May 2022) Novel robot design for collective transport of soft matter in complex environments. Poster presentation by D. Soto, **IEEE International Conference on Robotics and Automation**, Philadelphia, PA.

Tarr S, Aydin E, Goldman D I (Mar 2022) Locally Induced Analog Casimir Force from a Self-propelling Vibrating Robot Boat. Oral presentation by S. Tarr, **American Physical Society March Meeting**, Chicago, IL.

Diaz Cruz K, Tarr S, Goldman D I (Mar 2022) Water surface swimming dynamics in centipedes. Oral presentation by K. Diaz Cruz, **American Physical Society March Meeting**, Chicago, IL.

Brunner J S, Margolis J, Tarr S, Soto D, Goldman D I (Mar 2022) Investigating Orbits of a Textbook Mass-Pulley System. Oral presentation by J. S. Brunner, **American Physical Society March Meeting**, Chicago, IL.

Diaz Cruz K, Tarr S, Goldman D I (Jan 2022) Water surface swimming dynamics in a centipede. Oral presentation by K. Diaz Cruz, **SICB Annual Meeting**, Phoenix, AZ.

Tarr S, Aydin E, Goldman D I (Nov 2021) Surface Wave and Transport Dynamics of a Self-propelling Vibrating Robot Fan Boat. Oral presentation by S. Tarr, **Annual Meeting of the APS Division of Fluid Dynamics**, Phoenix, AZ.

Diaz Cruz K, Tarr S, Goldman D I (Nov 2021) Surface swimming dynamics of centipedes. Oral presentation by K. Diaz Cruz, **Annual Meeting of the APS Division of Fluid Dynamics**, Phoenix, AZ.

Tarr S, Castleman B, Aydin E, Goldman D I (Mar 2021) Active Transport Dynamics with Wave-Based Interactions. Oral presentation by S. Tarr, **American Physical Society March Meeting**, online.

Li S, Gynai H, Ozkan-Aydin Y, Tarr S, Laguna P, Goldman D I (Mar 2021) Substrate-mediated interaction of active agents on an elastic substrate. Oral presentation by S. Li, **American Physical Society March Meeting**, online.

Gynai H, Li S, Ozkan-Aydin Y, Tarr S, Aydin E, Laguna P, Goldman D I (Mar 2021) Nonlocal control of active agents on a deformable substrate. Oral presentation by H. Gynai, **American Physical Society March Meeting**, online.

Tarr S, Dutta B, Chakraborty B, Goldman D I (Oct 2018) Programming Collective Behaviors with Brownian Robots. Table talk by S. Tarr, **Greater Boston Area Statistical Mechanics Meeting**, Waltham, MA.

Tarr S, Dutta B, Chakraborty B, Goldman D I (Aug 2018) Programming Collective Behaviors with Brownian Robots. Poster presentation by S. Tarr, **Brandeis University SciFest VIII**, Waltham, MA.

Roy I, Tynes J, Henning T, Simonson A, Tarr S, Cox K (Sept 2017) Instilling a Maker Mindset on Campus. Panel discussion moderated by I. Roy and J. Tynes, **World Maker Faire NY**, Corona, NY.

**E. Grants and Contracts**

**E1. As Principal Investigator**

No data

**E2. As Co-Principal Investigator**

No data

**E3. As Senior Personnel or Contributor**

No data

**E4. Pending Proposals**

No data

**E5. Proposals Submitted but not Funded (last 2 years)**

04/2021-04/2026 NSF GRFP (Graduate Research Fellowships Program) (3-year annual stipend of $34,000 + $12,000 cost of education allowance to GT) “Active Transport Dynamics with Wave-Based Interactions”

04/2021-04/2024 DoD NDSEG (National Defense Science and Engineering Graduate) Fellowship Program ($38,400 annual stipend paid monthly + $5,000 travel budget + $1,200 annual health insurance + full tuition and fees to GT) “Active Transport Dynamics with Wave-Based Interactions”

**F. Other Scholarly and Creative Accomplishments**

No data

**G. Societal and Policy Impacts**

No data

**H. Other Professional Activities**

10/27/2021 Completed **Entering Mentoring** training workshop for graduate students and postdoctoral researchers offered by the Georgia Tech Undergraduate Research Opportunities Program in partnership with the Georgia Tech Graduate Education and Faculty Development office.

**V. Teaching**

**A. Courses Taught (last 6 years)**

No data

**B. Individual Student Guidance**

**B1. PhD Students**

No data

**B2. M.S. students**

No data

**B3. Undergraduate Students**

Joseph Brunner - Georgia Institute of Technology Physics major, Summer 2021 through Summer 2023

Joshua Margolis - Georgia Institute of Technology Physics major, Summer & Fall semesters 2021

Blake Castleman - Georgia Institute of Technology Mechanical Engineering major, Fall semester 2020

**B4. High School Student Interns**

Ryan Hirsh – Interning at Georgia Institute of Technology, Summer semester 2022

**B5. Service on Thesis or Dissertation Committees**

No data

**B6. Mentorship of Postdoctoral Fellows and Visiting Scholars**

No data

**C. Other Teaching Activities**

(\* next to item indicates work done at Brandeis University; all other roles were at Georgia Institute of Technology)

***Teaching Assistantships:***

Spring 2023 PHYS 2212 Head TA Intro Physics II Profs. E. Alicea-Muñoz & Z. Jiang

Fall 2022 CETL 8000 Physics GTA Preparation Prof. E. Alicea-Muñoz

Summer 2022 PHYS 2212 Intro Physics II Profs. E. Alicea-Muñoz & E. Greco

Spring 2022 PHYS 2212 Intro Physics II Profs. E. Murray & M. Jarrio

Fall 2021 PHYS 3201 Classical Mechanics I Prof. D. Goldman

Summer 2020 PHYS 2212 Intro Physics II Profs. M. Schatz & E. Greco

Spring 2020 PHYS 2212 Intro Physics II Profs. E. Murray & M. Jarrio

Fall 2019 PHYS 2212 Intro Physics II Profs. E. Murray & M. Jarrio

\*Spring 2019 PHYS 110A Mathematical Physics Prof. B. Chakraborty

***Guest Lectures:***

Through the Brandeis University Scientists in the Classroom Workshop, I gave a guest lecture on individualism in STEM and how to turn a passion for creative arts into success as a scientist to four separate classes of 15-30 high school students (Waltham HS, MA, USA) in April 2019.

**VI. Service**

**A. Professional Contributions**

No data

**B. Public and Community Service**

No data

**C. Institute Contributions**

No data