Teo A. Lara

teolara@mit.edu - 404 376 0535 - Cambridge, MA - https://tlara1.github.io/

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA 2022–2026
4.96 GPA, B.S. Physics & Mathematics
Relevant Coursework: Numerical Methods for PDEs, Quantum Field Theory, Quantum Mechanics, Classical Mechanics, General Relativity, Complex Analysis, Real Analysis

Decatur High School, Decatur, GA 2018–2022
IB Diploma Alum 2022, GPA: 4.98
Relevant Coursework: Linear Algebra, Multivariable Calculus, AP Statistics

RESEARCH

MIT Dunkel Group May 2025–Current
Faculty and Graduate Supervisors: Jörn Dunkel, Harry Walden, and Ashu Tripathi
Developing high-fidelity fluid–structure interaction simulations in IBAMR to analyze the biomechanics of jellyfish locomotion and feeding efficiency.

MIT/UC Berkeley Kamrin Group October 2023–Current
Faculty Supervisor: Ken Kamrin
Creating advanced Eulerian computational frameworks to model soft solid–fluid contact interactions using reference map techniques.

LBNL Center for Computational Sciences and Engineering June 2024–August 2024
Faculty Supervisors: Saurabh Sawant and Andy Nonaka
Implemented Non-Equilibrium-Green's Function (NEGF) formalism to simulate quantum transport in carbon nanotubes.

MIT Kavli Institute March–September 2023
Faculty Supervisor: Sarah Millholland
Investigated planetary system dynamics by modelling exoplanet resonance chains and obliquity evolution during migration phases using the REBOUNDx n-body integrator.

MIT Bush Applied Mathematics Laboratory November 2022–September 2023
Faculty Supervisors: John Bush and Bauyrzhan Primkulov
Formulated a deep-learning image recognition pipeline to track and analyze trajectories of fluid droplets in "walking droplet" hydrodynamics experiments.

CONFERENCES

July 2025, "Unified Eulerian method for fluid-immersed self- and multi-body solid contact," USNCCM18 Conference, Chicago Ill, poster and oral presentation.

PUBLICATIONS

Lara T., Kamrin K. "Unified Eulerian method for fluid-immersed self- and multi-body solid contact." *Computer Methods in Applied Mechanics and Engineering*, Vol 437, March 2025.

Sawant S., Lara T., et al.. “Non-ideal subthreshold swing in aligned carbon nanotube transistors due to variable occupancy discrete charge traps.” Submitted for publication in: *Physical Review Journals*. Submitted July 2025, not yet published.

Millholland S., Lara T., Toomlaid J. “Spin dynamics of planets in resonant chains.” *The Astrophysical Journal*, Vol 961, Number 2. January 2024.

Lara T., Galvan A. “Optimizing airfoil shape for small, low speed, unmanned gliders: A homemade investigation.” *Journal of Emerging Investigators*, Vol 6, March 2023.

HONOURS AND AWARDS

MIT SPUR Research Program Participant 2025
John Reed UROP Fund Recipient 2025
LBNL SULI Research Program Participant 2024
Paul E. Gray UROP Fund Recipient 2024
John P. Perry Memorial Fund Scholarship 2023
Georgia Scholar Honoree 2022
College Board Hispanic Recognition Award 2022
HSF Youth Leadership Institute Participant 2021
Georgia Certificate of Merit 2021

LEADERSHIP EXPERIENCE

MIT French House Living Group - President 2025–Current
Leads a 40-member residential community, overseeing operations, budgeting, event planning, and community engagement.

MIT Strategic Game Society - Treasurer 2025–Current
Manages and allocates funds for club operations, events, and new game acquisitions.

MIT Climbing Team - Team Captain/Coach 2023–2025
Directed practices, mentored team members, and coordinated logistics for competitions and training programs every week.

MIT Video Game Orchestra - Arranging Chair 2022–2024
Curated musical arrangements and helped organize concerts for MIT’s largest student-run orchestral musical group.

OrigaMIT - Executive Member 2022–2023
Planned and executed club meetings and events, including the 2022 OrigaMIT Convention, featuring 100+ attendees and dozens of workshops.

SKILLS & INTERESTS

Technology Skills: Python, C++, Matlab, Mathematica, LaTeX, GNUplot, VisIt, Paraview
Language Skills: Fluent English, Fluent Spanish, Proficient French
Other Interests: Clarinet Performance, Rock Climbing, Origami, Board Games, Culinary Arts

References Available Upon Request