

Mark Dodici

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My research provides theoretical explanations for surprising astrophysical observations, with a particular focus on phenomena involving supermassive black holes. Through this work, I develop our fundamental understanding of the three-body problem and tidal physics.

EDUCATION

University of Toronto	2022 – (expected 2027)
Ph.D. candidate, Department of Astronomy & Astrophysics	
Graduate researcher, Canadian Institute for Theoretical Astrophysics (CITA)	
Visiting Graduate Student, Institute for Advanced Study (Winter 2026)	
<i>Advisors: Professors Yanqin Wu & Scott Tremaine</i>	
Princeton University	2018 – 2022
A.B. Astrophysical Sciences, <i>magna cum laude</i>	
Certificate in Planets and Life	

PUBLICATIONS

FIRST AUTHOR

M. Dodici, S. Tremaine, & Y. Wu, 2025. Dynamical evolution of stellar binaries in galactic centers. arXiv eprints [astro-ph:2511.02905](https://arxiv.org/abs/astro-ph/2511.02905). (In press, *The Astrophysical Journal*.)

M. Dodici & S. Tremaine, 2024. Studying binary formation under dynamical friction using Hill's Problem. [The Astrophysical Journal, 972, 193](https://doi.org/10.3847/1538-4357/972/2/193).

M. Dodici & Y. Wu, in prep. Breaking up a denser, primordial Neptunian scatter belt to supply material for the cold, classical Kuiper Belt.

CONTRIBUTING

B. Lewis et al. (incl. **M. Dodici**), 2025. Improving Undergraduate Astronomy Students' Skills with Research Literature via Accessible Summaries: A Case Study with Astrobites-based Lesson Plans. [Phys. Rev. Physics Education Research, 21, 010124](https://doi.org/10.1103/PhysRevPhysEd.21.010124).

B. Hensley, C. Murray, & **M. Dodici**, 2022. Polycyclic Aromatic Hydrocarbons, Anomalous Microwave Emission, and their Connection to the Cold Neutral Medium. [The Astrophysical Journal, 929, 23](https://doi.org/10.3847/1538-4357/929/1/23).

TALKS

Shrunken binaries and hypervelocity stars from active galactic nuclei (<i>abstract submitted</i>)	
International Astronomical Union (IAU) Symposium 405. Brno, Czech Republic.	May 2026
Dynamical evolution of stellar binaries in the centers of galaxies	
IAU Symposium 398 / MODEST-25. Seoul, South Korea.	June 2025
American Astronomical Society (AAS) Division on Dynamical Astronomy 56. Atlanta, GA.	May 2025
Binary formation in galactic nuclei under dynamical friction	
AAS Division on Dynamical Astronomy 55. Toronto, ON.	May 2024
Department Lunch Seminar (U. Toronto). Toronto, ON.	Jan 2024
Breaking up the early Neptunian scatter belt to source material for the cold classical Kuiper belt.	
AAS Division for Planetary Science 55. San Antonio, TX.	Oct 2023
CITA Planet Day. Toronto, ON.	Aug 2023
Finding a distribution of stellar obliquities for newly-formed planets in binary systems.	
Emerging Researchers in Exoplanet Science Symposium VIII. New Haven, CT.	Jun 2023
Great Lakes Exoplanets Area Meeting. Columbus, OH.	Nov 2022
A Trojan Horse for White Dwarfs: Co-orbital asteroid dynamics under stellar mass loss, radiative effects.	
AAS 240. Pasadena, CA.	Jun 2022

TEACHING ASSISTANT EXPERIENCE

Stars and Planets (AST221) — Toronto	Fall 2024, 2025
Introduction to Astrophysics (AST320) — Toronto	Winter 2025
Stars and Galaxies (AST201) — Toronto	Winter 2023, 2024
The Sun and its Neighbours (AST101) — Toronto	Fall 2022, 2023
The Universe (AST203) — Princeton	Winter 2021, 2022

LEADERSHIP and SERVICE ROLES

Referee, The Open Journal of Astrophysics	2025 –
Graduate Astronomy Students Association	2022 –
<i>Co-President (2024 – 2025)</i>	
<i>Courses & Qualifying Exams Committee (2022 – 2024, 2025 –)</i>	
Coding the Cosmos (HS workshop series), <i>Co-director (2024 – 2025)</i>	2023 – 2025
UofT AstroTours (Public lecture/telescope events), <i>Co-director (2023 – 2024)</i>	2022 – 2024
Age of the Universe (HS workshop), <i>Co-organizer & Speaker</i>	2023

FELLOWSHIPS, GRANTS, and AWARDS

OTHER OUTREACH

Astrobites (Research blog), <i>Author & Education Study co-author</i>	2023 – 2025
Eclipse 2024 at the Toronto Public Library (Public lecture series), <i>Speaker</i>	2024
Solar Eclipse 2024: Indigenous Knowledge (Video), <i>Editor</i>	2024
Cosmos from your Couch (Astronomy video series), <i>Editor</i>	2023
ComSciCon Canada (Science Communication Workshop), <i>Attendee</i>	2023
Princeton Research Day (PRD; Virtual talk competition), <i>Award-winning presenter</i>	2021