Max Goldberg

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Contact Information

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Education

Ph.D. in Astrophysics, California Institute of Technology — 2024 (expected)

M.S. in Astrophysics, California Institute of Technology — 2022

Doctoral Advisor: Konstantin Batygin

B.S. in Astrophysics (with honors) & Mathematics, University of Chicago — 2019

Undergraduate Advisor: Daniel Fabrycky

Bachelor's Thesis: "Dynamical Detection of Singly-Transiting Circumbinary Planets."

First Author Publications

Goldberg, M., Fabrycky, D., et al. "A $5M_{\rm Jup}$ Coplanar Circumbinary Planet Around Kepler-1660AB." In review.

Goldberg, M. and Batygin, K. "Dynamics and Origins of the Near-Resonant Kepler Planets." *The Astrophysical Journal*, 948, (2023).

Goldberg, M., Batygin, K., and Morbidelli, A. "A Criterion for the Stability of Resonant Chains." *Icarus*, 388, (2022).

Goldberg, M. and Batygin, K. "Architectures of Compact Super-Earth Systems Shaped by Instabilities." *The Astronomical Journal*, 163.5, (2022).

Goldberg, M. and Batygin, K. "A Tidal Origin for a Three-body Resonance in Kepler-221." *The Astronomical Journal*, 162.1, (2021).

Goldberg, M., Hadden, S., Payne, M. J., and Holman, M. J. "Prospects for Refining Kepler TTV Masses Using TESS Observations." *The Astronomical Journal*, 157.4, (2019).

Co-Authored Publications

Dai, F., Masuda, K., Beard, C., Robertson, P., **Goldberg, M.**, et al. "TOI-1136 is a Young, Coplanar, Aligned Planetary System in a Pristine Resonant Chain." *The Astronomical Journal*, 165.2, (2023).

Awards and Honors

Raynor L. Duncombe Student Research Prize — 2021

David and Barbara Groce Travel Fund — 2021

Origins of Life Summer Undergraduate Research Prize Award — 2018

UCISTEM Summer Research Grant — 2017

Selected Talks and Posters

"Origins of the Architectures of Compact Multi-planet Systems" (invited) — November 2022
Southwest Research Institute, Boulder

"Architectures of Compact Super-Earth Systems Shaped by Instabilities" — May 2022
Exoplanets IV

"A Tidal Origin for Kepler-221" — May 2021
52nd DDA Meeting

"A New Method to Detect Circumbinary Planets" — January 2018
National Collegiate Research Conference
Harvard University

Teaching Experience

Teaching assistant, California Institute of Technology

- Ay/Ge 133 (hybrid): The Formation and Evolution of Planetary Systems, Fall 2021
- Ph 1c (remote): Electromagnetism, Spring 2021
- Ay/Ge 133 (remote): The Formation and Evolution of Planetary Systems, Winter 2021
- Ph 1a (remote): Classical Mechanics, Fall 2020

Teaching assistant, University of Chicago

- BPRO 28800: From Fossils to Fermi's Paradox: Origin and Evolution of Intelligent Life, Winter 2019

Outreach and Mentoring

Summer Research Connection Mentor, Caltech 2021

Mentored three high school students, teaching the basics of n-body simulations and Galilean moon formation to study the role of giant impacts in the Jovian system

Caltech Astronomy Outreach 2019–2022

2× Astronomy on Tap Speaker

Panelist, answered astronomy questions after an outreach presentation

Led public telescope observations of planets and the transit of Mercury

Assisted in Planet Finder Academy, program for high school students to learn about astronomy and exoplanet detection

Professional Service

Referee for Monthly Notices of the Royal Astronomical Society, Astronomical Journal, Astronomy & Astrophysics