

ASTER GRAVELY TAYLOR (LEGAL NAME: JADEN G. TAYLOR)

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RESEARCH INTERESTS

- Minor body dynamics
- Planetary science
- Planetary and stellar disks
- Numerical modeling
- Magnetohydrodynamics
- Plasma physics
- Fluid dynamics

EDUCATION

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|------------|---|----------------------|
| PhD | Astronomy, University of Michigan | (Expected) June 2028 |
| MSc | Astronomy, University of Michigan | (Expected) June 2025 |
| BS | University of Chicago, B.S. in Astrophysics Minor in Biology <i>Summa cum laude</i> , GPA: 3.97 | June 3, 2023 |

HONORS AND AWARDS

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| Hertz Fellow (~\$250,000) | 2023 |
| Rackham Merit Fellow (\$72,000) | 2023 |
| MICDE Fellow (\$4,000) | 2023 |
| LPI Career Development Award (\$1,000) | 2024 |
| USRA Travel Fund (\$2,000) | 2024 |
| Enrico Fermi Scholar Physical Sciences Collegiate Divisional Honors, 3rd Year | 2022 |
| Robert Maynard Hutchins Scholar | 2021 |
| University of Chicago Dean's List | 2020-2022 |
| Metcalf Scholar (\$5,000) | 2020 |
| National Merit Scholar (\$8,000) | 2019-2023 |

PUBLICATIONS

9. **A. Taylor**, F. Adams (2024). *Radiative Signatures of Circumplanetary Disks and Envelopes*. In prep.
8. **A. Taylor**, F. Adams (2024). *Formation and Structure of Circumplanetary Disks and Envelopes during the Late Stages of Giant Planet Formation*. *Icarus*, 409, 116044, doi:10.1016/j.icarus.2024.116044. ([Link](#))
7. **A. Taylor**, J. Steckloff, D. Seligman, D. Farnocchia, L. Dones, D. Vokrouhlicky, D. Nesvorny, & M. Micheli (2024). *A Proposed Dark Comet Evolutionary Track from the Jupiter Family to the Near-Earth Populations*. Submitted to *Icarus*.
6. D. Seligman, A. Feinstein, D. Lai, L. Welbanks, **A. Taylor**, J. Becker, F. Adams, M. Morgan, & J. Bergner (2023). *Potential Melting of Extrasolar Planets by Tidal Dissipation*. *The Astrophysical Journal*. ([Link](#))
5. **A. Taylor**, D. Farnocchia, D. Vokrouhlicky, D. Seligman, J. Steckloff, & M. Micheli (2024). *Seasonally Varying Outgassing as an Explanation for Dark Comet Accelerations*. *Icarus*, 408, 115822, doi:10.1016/j.icarus.2023.115822. ([Link](#))
4. **A. Taylor**, D. Seligman, O. Hainaut, & K. Meech (2023). *Fitting the Light Curve of 1I/'Oumuamua with a Nonprincipal Axis Rotational Model and Outgassing Torques*. *The Planetary Science Journal*, 4, 186, doi:10.3847/PSJ/acf617. ([Link](#))
3. W.G. Levine, **A. Taylor**, D. Seligman, D. Hoover, A. Pearce, R. Jedicke, J. Bergner, & G. Laughlin (2023). *Interstellar Comets from Post–Main Sequence Systems as a Tracer of Extrasolar Oort Clouds*. *The Planetary Science Journal*, 4, 7, doi:10.3847/PSJ/acdf58. ([Link](#))
2. **A. Taylor**, D. Seligman, D. MacAyeal, O. Hainaut, & K. Meech (2023). *Numerical Simulations of Tidal Deformation and Resulting Light Curves of Small Bodies: Material Constraints of 99942 Apophis and 1I/'Oumuamua*. *The Planetary Science Journal*, 4, 79, doi: 10.3847/PSJ/accef. ([Link](#))
1. D. Seligman, D. Farnocchia, M. Micheli, D. Vokrouhlicky, J. Bergner, **A. Taylor**, S. Chesley, P. Veres, K. Meech, M. Devogele, P. Pravec, R. Matson, S. Deen, D. Tholen, R. Weryk, & O. Hainaut (2023) *Dark Comets? Unexpectedly Large Non-Gravitational Forces on a Sample of Inactive Solar System Small Bodies*. *The Planetary Science Journal*, 4, 35, doi: 10.3847/PSJ/acb697. ([Link](#))

CONTRIBUTED SCIENTIFIC PRESENTATIONS

Seminars:

- Society of Astronomy Students, University of Michigan (November 2023, outreach talk)
- Star and Planet Formation Seminar Series, University of Michigan (October 2023)
- Michigan State University, AstroCoffee (September 2023)

Conference Talks:

- Small Body Assessment Group Meeting 30 (January 30, 2024)

Conference Posters:

- Emerging Researchers in Exoplanet Science VII (June 2023)
- AAS 241 (January 2023)

MEDIA HIGHLIGHTS

“This mysterious interstellar object could contain the universe’s darkest secrets.” *Inverse*, August 2023. ([Link](#))

“Asteroids that speed up unexpectedly may be ‘dark comets’ in disguise.” *New Scientist*, March 2023. ([Link](#))

TEACHING EXPERIENCE

Undergraduate Teaching Assistant, University of Chicago

- Spring 2023: Astronomy 21100: Computational Methods for Astrophysics
- Autumn 2022: Astronomy 20500: Introduction to Python Programming with Applications to Astro Statistics
- Spring 2022: Astronomy 21100: Computational Methods for Astrophysics
- Autumn 2021: Astronomy 20500: Introduction to Python Programming with Applications to Astro Statistics
- Autumn 2020: Astronomy 18400: From the Big Bang to Human Consciousness

COMMUNITY SERVICE

President of the Ryerson Astronomical Society

Sept 2021 to June 2023

Hosting lectures, observation nights, Dark Sky Trips, maintaining the historic observatory, running educational events for children
The University of Chicago, Chicago, IL

Boys and Girls Club of Redwood City

Oct 2015 to Jun 2017

One-on-one and classroom tutoring of underprivileged students in math and science

LANGUAGES

English: Native Language

American Sign Language: Advanced Low Speaking and Listening, ACTFL scale

Mandarin: Intermediate Low Speaking and Listening, Novice Reading and Writing, ACTFL scale