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

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 Numerical modeling Magnetohydrodynamics Plasma physics Fluid dynamics 	
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REFEREED PUBLICATIONS

Metcalf Scholar (\$5,000)

National Merit Scholar (\$8,000)

- 11. **A. Taylor**, D. Seligman, M. Holman, et al (2024). *Strong Nongravitational Accelerations and the Potential for Misidentification of Near-Earth Objects*. Submitted to the Astrophysical Journal.
- 10. **A. Taylor** & F. Adams (2024). *Radiative Signatures of Circumplanetary Disks and Envelopes During the Late Stages of Giant Planet Formation*. Submitted to Icarus.
- 9. D. Seligman, D. Farnocchia, M. Micheli, et al (incl. **A. Taylor**) (2024) *Two Distinct, but Possibly Related, Populations of Dark Comets.* Under review at Proceedings of the National Academy of Sciences.
- A. Taylor, J. Steckloff, D. Seligman, et al (2024). *The Dynamical Origins of the Dark Comets and a Proposed Evolutionary Track*. Icarus, 116207, doi: 10.1016/j.icarus.2024.116207. (Link)

2020

2019-2023

- 7. **A. Taylor** & F. Adams (2024). *Formation and Structure of Circumplanetary Disks and Envelopes during the Late Stages of Giant Planet Formation*. Icarus, 415, 116044, doi:10.1016/j.icarus.2024.116044. (Link)
- 6. **A. Taylor**, D. Farnocchia, D. Vokrouhlicky, et al (2024). *Seasonally Varying Outgassing as an Explanation for Dark Comet Accelerations*. Icarus, 408, 115822, doi:10.1016/j.icarus.2023.115822. (Link)
- 5. **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)
- 4. D. Seligman, A. Feinstein, D. Lai, et al (incl. **A. Taylor**) (2023). *Potential Melting of Extrasolar Planets by Tidal Dissipation*. The Astrophysical Journal. (Link)
- W.G. Levine, A. Taylor, D. Seligman, et al (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, et al (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/acccef. (Link)
- 1. D. Seligman, D. Farnocchia, M. Micheli, et al (incl. **A. Taylor**) (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, UM (November 2023, outreach talk)
- Star and Planet Formation Seminar Series, UM (October 2023)
- Michigan State University, AstroCoffee (September 2023)

Conference Talks:

- Emerging Researchers in Exoplanet Science IX (July 11, 2024)
- Lunar and Planetary Science Conference 55 (March 14, 2024)
- Small Body Assessment Group Meeting 30 (January 30, 2024)

Conference Posters:

- Division of Dynamical Astronomy 55 (May 2024)
- Emerging Researchers in Exoplanet Science VIII (June 2023)
- American Astronomical Society Meeting 241 (January 2023)

SELECTED MEDIA HIGHLIGHTS

Is Earth Surrounded by Dark Objects? *Event Horizon Podcast*, July 2024. (Link) Most Near-Earth Objects Could Be 'Dark Comets,' Neither Comets Nor Asteroids. *Gizmodo*, July 2024. (Link)

'Dark Comets' May Have Given Earth Its Water Long Ago. *Space.com*, July 2024. (Link) 'Dark Comets' Could Have Delivered Much Of Earth's Water. *Forbes*, July 2024. (Link)

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

ERES Mission & Vision Committee Member2024Helped to define the mission and goals of the ERES Conference Series.President of the Ryerson Astronomical SocietySept 2021 to June 2023Hosting lectures observation nights Dark Sky Trips maintaining the historic observatorySept 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

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)