

Research Interests

My research focuses on the gravitational dynamics of bodies around compact objects. I study the evolution of eccentric nuclear disks after a supermassive black hole receives a gravitational recoil kick. Using similar dynamics, I study the evolution of eccentric planetesimal disks following a white dwarf natal kick.

Education

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| <i>Ph.D.</i> , Astrophysical and Planetary Sciences University of Colorado Boulder | Expected 2025 |
| <i>M.S.</i> , Astrophysical and Planetary Sciences University of Colorado Boulder | 2022 |
| <i>B.S.</i> , Physics, Honors & <i>B.S.</i> , Mathematics, Honors, <i>Valedictorian</i> Truman State University | 2019 |

Honors and Awards

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| Carl Hansen Memorial Fellowship | Apr. 2023 |
| Chance Irick Cooke Fellowship | May 2022 |
| Raynor L. Duncombe Student Research Prize, <i>DDA</i> | May 2021 |
| Award for Excellence in Teaching | Jan. 2021 |
| Outstanding Student in Physics | May 2019 |
| President's List | Aug. 2015 – May 2019 |
| Dr. Lanny C. Morley Scholarship | Aug. 2018 |
| Dr. Robert and Harlene Bailey Scholarship | Aug. 2018 |
| Dr. Robert Peavler Memorial Scholarship | Aug. 2017 |
| Dr. Wray and Helen Rieger Scholarship | Aug. 2017 |
| Dr. Eugene W. Smith Memorial Scholarship | Aug. 2017 |
| Mr. and Mrs. Robert Lisle Walker Scholarship | Aug. 2017 |
| TruScholars Award | Jun. 2017 |
| Kappa Mu Epsilon, <i>Mathematics Honor Society</i> | Apr. 2017 |
| Sigma Pi Sigma, <i>Physics Honor Society</i> | Mar. 2017 |
| L. Scott and Carol D. Ellis Scholarship | Jan. 2017 |
| Duane and Donna Norman Hicks Scholarship | Aug. 2016 |
| President's Honorary Scholarship | Aug. 2015 |
| International Baccalaureate Scholarship | Aug. 2015 |

Publications

3. **Akiba**, Dexter, et al. (2023); *ApJ*, 953:124
Reprocessing Models for the Optical Light Curves of Hypervariable Quasars from the Sloan Digital Sky Survey Reverberation Mapping Project
2. **Akiba** & Madigan (2021); *ApJL*, 921:L12
On the Formation of an Eccentric Nuclear Disk following the Gravitational Recoil Kick of a Supermassive Black Hole
1. **Akiba**, Neugarten, Ortmann, & Gokhale (2019); *JAAVSO*, 47:2
Multi-filter Photometric Analysis of W Ursae Majoris (W UMa) Type Eclipsing Binary Stars KID 11405559 and V342 Boo

Submitted or In-Preparation:

4. **Akiba** & Madigan (2023); Submitted to *ApJ*, arXiv:2305.03054
Anisotropic Star Clusters around Recoiling Supermassive Black Holes
3. **Akiba**, McIntyre, & Madigan (2023); Manuscript in preparation
White Dwarf Polluters: Eccentric Disk Formation via Natal Kicks and the Tidal Disruption of Planetesimals
2. **Akiba**, Naoz, & Madigan (2023); Manuscript in preparation
Evidence of a Past Intermediate-Mass Black Hole Merger in the Galactic Center
1. Bright, **Akiba**, & Madigan (2023); Manuscript in preparation
Precessing Eccentric Stellar Disks

Invited* & Contributed Presentations

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| MODEST-23, <i>Northwestern University</i> (poster) | Aug. 2023 |
| *Department of Applied Mathematics, <i>CU Boulder</i> | Feb. 2023 |
| *Smadar Naoz Research Group, <i>UCLA</i> | Jun. 2022 |
| AAS Division of Dynamical Astronomy, <i>Flatiron Institute</i> | Apr. 2022 |
| *AAS High Energy Astrophysics Division, <i>Pittsburgh, PA</i> | Mar. 2022 |
| *Colloquium Talk, <i>Truman State University</i> | Feb. 2022 |
| Comprehensive Exam, <i>CU Boulder</i> | Aug. 2021 |
| AAS Division of Dynamical Astronomy, <i>Virtual</i> | May 2021 |
| APS April Meeting 2019, <i>Denver, Colorado</i> | Apr. 2019 |
| Student Research Conference, <i>Truman State University</i> | Apr. 2019 |
| SPS Zone 12 Meeting, <i>William Jewell College</i> | Feb. 2019 |
| Conference for Undergraduate Women in Physics, <i>Northwestern University</i> | Jan. 2019 |
| Mathematics Capstone Presentation, <i>Truman State University</i> | Dec. 2018 |
| Mid-American Regional Astrophysics Conference, <i>UMKC</i> | Apr. 2018 |
| SPS Zone 12 Meeting, <i>Truman State University</i> | Feb. 2018 |
| Summer Research Symposium, <i>Truman State University</i> | Aug. 2017 |

Research Computing Allocations

RMACC Summit Supercomputer, 384k CPU hours

May 2021

Mentoring Experience

[Undergraduate Students](#) and [High School Students](#) I mentored at CU Boulder.

[Tom Alexander](#)

Sep. 2023 – Present

Dynamical Evolution of an ω -Clustered Disk

[Selah McIntyre](#)

Nov. 2021 – Present

Stars Engulfing Planets

[Allie Christensen](#)

Oct. 2020 – Nov. 2021

Formation of Eccentric Disks from a Black Hole Companion

Teaching Experience

Lead Graduate Student Fellow

Aug. 2021 – Present

Graduate Galaxies TA

Aug. 2022 – Dec. 2022

Guest Lecturer for ASTR 2030: Black Holes

Mar. 2022

Introductory Astronomy Graduate TA

Jan. 2020 – May 2020

Astronomical Observations Graduate TA

Aug. 2019 – Dec. 2019

Upward Bound Coordinator and Academic Coach

Aug. 2017 – Aug. 2019

STEM Talent Expansion Programs Academic Trainer

Jan. 2018 – May 2019

Calculus Tutor

Aug. 2016 – May 2019

SPS Physics Tutor

Aug. 2016 – May 2019

Observational Astronomy Undergraduate TA

Aug. 2018 – Dec. 2018

Scholastic Enhancement Experience Math Tutor

Jun. 2018 – Aug. 2018

Vibrations and Waves Tutor

Jan. 2018 – May 2018

Introductory Physics Grader

Aug. 2017 – Dec. 2017

Introductory Astronomy Undergraduate TA

Aug. 2016 – May 2017

IB Math HL Summer School Instructor

May 2015 – Aug. 2016

Community Service Experience

Referee for ApJ Letters

Aug. 2023

Welcome/Social Committee

Aug. 2020 – Aug. 2023

Admissions Committee

Aug. 2021 – May 2022

Graduate Peer Mentor

Aug. 2021 – May 2022

CU-Prime Mentor

Aug. 2020 – May 2022

Recruitment and Retention Committee

Aug. 2019 – May 2021

McNair Program Mentor

Aug. 2019 – May 2020

Graduate Curriculum and Concerns Committee

Aug. 2019 – May 2020

Observatory Committee

Aug. 2019 – May 2020

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| Observatory Open House Volunteer | Aug. 2019 – Mar. 2020 |
| President of the Society of Physics Students | Aug. 2017 – May 2019 |
| Mathematical Association of America | Aug. 2016 – May 2019 |
| President of the Stargazers Astronomy Club | Aug. 2017 – May 2018 |
| Secretary of Women in Physics | Jan. 2017 – May 2017 |