

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

<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

Carl Hansen Memorial Fellowship, <i>CU Boulder</i>	Apr. 2023
Chance Irick Cooke Fellowship, <i>CU Boulder</i>	May 2022
Raynor L. Duncombe Student Research Prize, <i>DDA</i>	May 2021
Award for Excellence in Teaching, <i>CU Boulder</i>	Jan. 2021
Outstanding Student in Physics, <i>Truman State University</i>	May 2019
President's List, <i>Truman State University</i>	Aug. 2015 – May 2019
Dr. Lanny C. Morley Scholarship, <i>Truman State University</i>	Aug. 2018
Dr. Robert and Harlene Bailey Scholarship, <i>Truman State University</i>	Aug. 2018
Dr. Robert Peavler Memorial Scholarship, <i>Truman State University</i>	Aug. 2017
Dr. Wray and Helen Rieger Scholarship, <i>Truman State University</i>	Aug. 2017
Dr. Eugene W. Smith Memorial Scholarship, <i>Truman State University</i>	Aug. 2017
Mr. and Mrs. Robert Lisle Walker Scholarship, <i>Truman State University</i>	Aug. 2017
TruScholars Award, <i>Truman State University</i>	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, <i>Truman State University</i>	Jan. 2017
Duane and Donna Norman Hicks Scholarship, <i>Truman State University</i>	Aug. 2016
President's Honorary Scholarship, <i>Truman State University</i>	Aug. 2015
International Baccalaureate Scholarship, <i>Truman State University</i>	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

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 Sep. 2023 – Present

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

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