

Tatsuya Akiba

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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

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

Honors and Awards

2023	Carl Hansen Memorial Fellowship (CU Boulder)
2022	Chance Irick Cooke Fellowship (CU Boulder)
2021	Raynor L. Duncombe Student Research Prize (DDA) Award for Excellence in Teaching (CU Boulder)
2019	Outstanding Student in Physics (Truman State) President's List (Truman State)
2018	Dr. Lanny C. Morley Scholarship (Truman State) Dr. Robert and Harlene Bailey Scholarship (Truman State)
2017	Dr. Robert Peavler Memorial Scholarship (Truman State) Dr. Wray and Helen Rieger Scholarship (Truman State) Dr. Eugene W. Smith Memorial Scholarship (Truman State) Mr. and Mrs. Robert Lisle Walker Scholarship (Truman State)

2017	TruScholars Award (Truman State)
	Kappa Mu Epsilon (Mathematics Honor Society)
	Sigma Pi Sigma (Physics Honor Society)
	L. Scott and Carol D. Ellis Scholarship (Truman State)
2016	Duane and Donna Norman Hicks Scholarship (Truman State)
2015	President's Honorary Scholarship (Truman State)
	International Baccalaureate Scholarship (Truman State)

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

2023	MODEST-23 (Northwestern), poster *Dept. of Applied Mathematics (CU Boulder)
2022	*Smadar Naoz Research Group (UCLA) AAS Division of Dynamical Astronomy 53 (Flatiron Institute) *AAS High Energy Astrophysics Division 19 (Pittsburgh, PA) *Colloquium Talk (Truman State)
2021	Master's Thesis Defense (CU Boulder) AAS Division of Dynamical Astronomy 52 (Virtual)
2019	APS April Meeting 2019 (Denver, CO) Student Research Conference (Truman State) SPS Zone 12 Meeting (William Jewell College) APS CUWiP (Northwestern), poster
2018	Mathematics Capstone Talk (Truman State) Mid-American Regional Astrophysics Conference (UMKC) SPS Zone 12 Meeting (Truman State)
2017	Summer Research Symposium (Truman State)

Research Computing Allocations

2021	RMACC Summit Supercomputer 384k CPU hours
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Mentoring Experience

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

2023 – Present	Tom Alexander Dynamical Evolution of an ω -Clustered Disk
2021 – Present	Selah McIntyre Stars Engulfing Planets
2020 – 2021	Allie Christensen Formation of Eccentric Disks from a Black Hole Companion

Teaching Experience

2021 – 2023	Lead Graduate Student Fellow (CU Boulder)
2022	Graduate Galaxies TA (CU Boulder)
2022	Guest Lecturer for ASTR 2030: Black Holes (CU Boulder)
2020	Introductory Astronomy Graduate TA (CU Boulder)
2019	Astronomical Observations Graduate TA (CU Boulder)
2018 – 2019	STEP Scholars Program Academic Trainer (Truman State)
2017 – 2019	Upward Bound Coordinator & Academic Coach (Truman State)
2016 – 2019	Calculus Tutor (Truman State)
2016 – 2019	Physics Tutor (Truman State)
2018	Observational Astronomy Undergraduate TA (Truman State)
2018	Scholastic Enhancement Experience Math Tutor (Truman State)
2018	Vibrations and Waves Tutor (Truman State)
2017	Introductory Physics Grader (Truman State)
2016 – 2017	Introductory Astronomy Undergraduate TA (Truman State)
2015 – 2016	IB Math HL Summer School Instructor (KIST, Tokyo, Japan)

Community Service Experience

2023	Referee for ApJ Letters
2020 – 2023	Welcome/Social Committee (CU Boulder)
2021 – 2022	Admissions Committee (CU Boulder)
2021 – 2022	Graduate Peer Mentor (CU Boulder)
2020 – 2022	CU-Prime Mentor (CU Boulder)
2019 – 2021	Diversity, Equity, & Inclusion Committee (CU Boulder)
2019 – 2020	McNair Program Mentor (CU Boulder)
2019 – 2020	Graduate Curriculum and Concerns Committee (CU Boulder)
2019 – 2020	Observatory Committee (CU Boulder)
2019 – 2020	Observatory Open House Volunteer (CU Boulder)
2017 – 2019	President of SPS (Truman State)

2016 – 2019	Mathematical Association of America (Truman State)
2017 – 2018	President of the Stargazers Astronomy Club (Truman State)
2017	Secretary of Women in Physics (Truman State)