Tatsuya Akiba

University of Colorado, Boulder
Astrophysical & Planetary Sciences/JILA

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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

Ph.D., Astrophysical and Planetary Sciences — Expected 2025
University of Colorado Boulder

M.S., Astrophysical and Planetary Sciences — 2022
University of Colorado Boulder

B.S., Physics, Honors & *B.S.*, Mathematics, Honors, *Valedictorian* — 2019
Truman State University

Honors and Awards

Carl Hansen Memorial Fellowship	Apr. 2023
Chance Irick Cooke Fellowship	May 2022
Raynor L. Duncombe Student Research Prize, *DDA*	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, *Mathematics Honor Society*	Apr. 2017
Sigma Pi Sigma, *Physics Honor Society*	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

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

Research Computing Allocations

RMACC Summit Supercomputer, 384k CPU hours — 2021 – 2022

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