Zack Andalman

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https://www.zandalman.com/ ArXiv

EDUCATION

Princeton University	Princeton, NJ	Ph.D., Astrophysics		2023 - 2028
Yale University	New Haven, CT	B.S., Physics	3.95 GPA	2019 - 2023
Evanston Township HS	Evanston, IL	Diploma	4.00 GPA	2015 - 2019

RESEARCH EXPERIENCE

Graduate Student Researcher, Princeton University 2023 - present
Advisor: Prof. Romain Teyssier
Using cosmological `RAMSES` simulations to investigate star formation physics at cosmic dawn.

Undergraduate Research Assistant, UC Santa Cruz 2022 - 2023
Advisor: Prof. Enrico Ramirez-Ruiz, Prof. Priyamvada Natarajan
Developed a semi-analytic model for line emission in disk-emitting tidal disruption events.

Undergraduate Research Assistant, Yale University 2021 - 2022
Advisor: Prof. Andrew Szymkowiak
Designed a cosmic ray detector for a CubeSat satellite.

Undergraduate Research Assistant, Yale University 2020 - 2021
Advisor: Prof. Nir Navon
Constructed a magneto-optical trap control box for the cooling of Sr atoms to ultracold temperatures.

High School / Undergraduate Research Assistant, Northwestern University 2018 - 2022
Advisor: Prof. Alexander Tchekhovskoy
Analyzed circularization and disk formation in GRHD `H-AMR` simulations of a tidal disruption event.

PUBLICATIONS

[1] **Andalman, Z. L.**, et. al. (2024). *Optical Line Emission Diagnostics for Tidal Disruption Events.* Currently in prep with plans for submissions to ApJ Letters.

[2] Kaaz, N., et. al. (2023) *Nozzle Shocks, Disk Tearing and Streamers Drive Rapid Accretion in 3D GRMHD Simulations of Warped Thin Disks.* MNRAS. (`https://ui.adsabs.harvard.edu/abs/2023ApJ...955...72K/abstract`)

[3] **Andalman, Z. L.** et. al. (2022). *Tidal Disruption Discs Formed and Fed by Stream-stream and Stream-disc Interactions in Global GRHD Simulations.* MNRAS. (`https://ui.adsabs.harvard.edu/abs/2022MNRAS.510.1627A/abstract`)

PRESENTATIONS

HEAD Frontiers Seminar Series, Talk 2023

241st American Astronomical Society Conference, Poster 2023

19th/20th Meeting of the High Energy Astrophysics Division, Invited Talk/Poster 2022, 2023
Undergraduate poster prize (2023)

Connecticut Space Grant Consortium Expo, 2 Posters 2021, 2022

Blue Waters Symposium for Petascale Science and Beyond, 2 Posters 2018, 2019

SKILLS

Computer languages: Python, C, C++, HTML/CSS/Javascript, Unix shell

Software: git, HPC, `H-AMR`, `RAMSES`, `CLOUDY`, Paraview

Languages: Spanish

GRANTS, FELLOWSHIPS, AND AWARDS

DOE Computational Science Graduate Fellowship, Krell Institute — 2023 - 2027

Martin Schwarzschild Fellowship, Princeton University (departmental award) — 2023 - 2025

Michael Manzella Award, Yale University (leadership award) — 2023

Collaborator on NSF Award Number 2206243 — 2022
Collaborative Research: Connecting Models to Observations of Tidal Disruption Events

Lamat Fellowship, University of California Santa Cruz (REU) — 2022

Hahn Scholarship, Yale University — 2019 - 2021
Using Ultracold Strontium to Investigate the Quantum Many-Body Problem

Student Project Grant, Connecticut Space Grant Consortium — 2020
Active-Adjustment Ornithopter, Federal FTE Award P-1643

First-Year Summer Fellowship, Yale University — 2020
Using Ultracold Strontium to Investigate the Quantum Many-Body Problem

LEADERSHIP EXPERIENCE

Yale Undergraduate Aerospace Association, President — 2022 - 2023
Led the largest undergraduate engineering organization at Yale.

Yale Undergraduate Aerospace Association, Director of Projects — 2021 - 2022

Yale Club Triathlon, Captain — 2021 - 2022

Yale Undergraduate Aerospace Association, Project Leader — 2020 - 2021
Led a small team building a robotic bird capable of self-correcting flight.

PROFESSIONAL SERVICE

YouTube channel with cutting-edge visualizations — 2021 - present

Contributor to the open-source GRMHD code H-AMR — 2021 - 2023

Referee for MNRAS — 2021
Number of papers refereed: 2

OUTREACH

Tutor for the Prison Teaching Initiative — 2024 - present
Tutoring incarcerated folks in the New Jersey prison system

Teacher at Yale Splash — 2022
Taught a class on black hole physics to high schoolers.

Peer Mentor for the Society for Physics Students — 2022

STEM Likely Representative — 2020 - 2022
Mentored admitted students in STEM on navigating university.

Designed a challenge for the Governor's Summer STEM Challenge in CT — 2021
Where the rubber meets the road!

Led outreach event with public schools in New Haven — 2021
The Sky's the Limit! Building and Flying Model Aircraft

HOBBIES

Jazz piano, triathlon, Settlers of Catan