Updated Feb 2023

Vikram Manikantan

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Education

May 2027 **Ph.D., M.S., Astronomy & Astrophysics** — University of Arizona, GPA: 4.0/4.0

Jun 2022 **B.A., Physics w/ Honors + Computer Science Minor** — Northwestern University, GPA: 3.8/4.0

Research Projects

Jan 2023 – present **Multi-Messenger Eccentric Binary Black Hole Mergers** (with Einstein Toolkit)

- Running numerical relativity and magnetohydrodynamic simulations to understand the evolution of an eccentric binary black hole system.
- Studying multi-messenger signals (gravitational waves and electromagnetic) to provide measurable, quantitative differences from circular mergers.

Oct 2022 – present **Initial Accretion Disk Solutions and Their Effect on Simulation Evolution** (with Athena++ GRMHD Simulations)

- Developed in-house analysis tools in python with Numpy and Matplotlib to study Athena++ simulation data sets.
- Implemented two additional accretion disk torus solutions (Penna+ 2013; Chakrabarti 1985) for the Athena++ GRMHD simulation suite.

July 2020 – Feb 2023 **Magnetized Winds as a Dominant Mode of Angular Momentum Transport^** (with H-AMR GRMHD Simulations)

- Awarded outstanding thesis research project in physics & astronomy at Northwestern University. Department Record; Press Release.
- Developed novel python analysis code to study multiple angular momentum transport modes within magnetically arrested accretion disks.
- Designed a new, consistent method to define disk/wind boundaries in magnetically driven accretion regimes.

Employment

Aug 2022 – present **Astrophysics Graduate Research Assistant** — University of Arizona, Tucson, AZ
Advisor: Prof. Vasilis Paschalidis

Jun 2019 – Jul 2022 **Computational Astrophysics Researcher** — Northwestern University, Evanston, IL
Advisor: Prof. Sasha Tchekhovskoy

Jun 2021 – Aug 2021 **Solutions Engineering Summer Intern** — Deloitte Consulting, Chicago, IL

^ Manuscript available upon request

Publication(s)

1. **Manikantan et al. 2023**, Magnetized Winds as the Dominant Mode of Angular Momentum Transport in Magnetically Arrested Disks (in prep)

Grants

Feb 2023	Theoretical Astrophysics Program Travel Grant	$1000
Jun 2020	Summer Undergraduate Research Grant	$3500
Jun 2019	Undergraduate Research Assistantship Program	$3500

Presentations

Jun 2022	Annual European Astronomical Society Meeting (EAS)	Poster
May 2022	UChicago High-Energy Astrophysics Journal Club	Talk
Jan 2022	237th American Astronomical Society Meeting (Cancelled)	Poster

Teaching/Mentoring

Jan 2022 – Jun 2022 **Senior Student Mentor** in the *Society of Physics Students* and *We're in Physics* mentorship program

Jan 2022 – Jun 2022 **Undergraduate Grader** for physics 140-2 and 140-3 (introductory honors physics for majors)

Awards

AY 2021 – 2022 **Outstanding Undergraduate Thesis Research in the Physics and Astronomy Department** — Northwestern University Evanston, IL

Department Page; Press Release.

References

1.	Professor Vasilis Paschalidis	University of Arizona
2.	Professor Sasha Tchekhovskoy	Northwestern University
3.	Professor Jens Koch	Northwestern University

* Contact information available upon request