

# PRANAV SATHEESH

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## RESEARCH INTERESTS

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Massive black hole dynamics, Galaxy-black hole co-evolution, Massive black hole formation, Gravitational Waves

## EDUCATION

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<b>University of Florida</b> <i>Ph.D. in Physics</i> Advisor: Dr. Laura Blecha	2022 - Present
<b>Indian Institute of Technology Madras</b> <i>BS-MS Dual Degree in Physics</i>	2017 - 2022

## APPOINTMENTS

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<b>Graduate Research Assistant</b> University of Florida Department of Physics	2023 - Present
<b>Graduate Teaching Assistant</b> University of Florida Department of Physics	2022 - 2023

## AWARDS AND SCHOLARSHIPS

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Steigleman fellowship for graduate research in theoretical astrophysics in UF Physics	2024
Graduate fellowship for first-year graduate students from UF Physics	2022
62nd Institute day award for academic performance in Physics from IIT Madras	2021
Selected for ThinkSwiss Research Scholarship	2020
Recipient of the INSPIRE-DST Scholarship for Higher Education	2017 - 2022

## PUBLICATIONS

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- **Satheesh, P.**, Blecha, L., & Kelley, L. Z. (2025). *Mergers and Recoil in Triple Massive Black Hole Systems from Illustris*, [arXiv:2506.04369](#) , submitted to *APJ*
- Paul, K., Maurya, A., Henry, Q., Sharma, K., **Satheesh, P.**, Divyajyoti, Kumar, P., & Mishra, C.K. (2024). *ESIGMAHM: An Eccentric, Spinning inspiral-merger-ringdown waveform model with Higher Modes for the detection and characterization of binary black holes*, *Phys. Rev. D* **111**, 084074 (2025), [arXiv:2409.13866](#).

## PRESENTATIONS

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### *Talks*

- *Massive black hole mergers in cosmological simulations*, **Choir conference on New Data that Challenge Underlying Assumptions in Early Galaxy Evolution**, Schoodic Institute , July 2025
- *Studying gravitational wave and slingshot recoil of massive black holes in cosmological simulations*, **33rd Midwest Relativity meeting**, University of Chicago, November 2023

## Posters

- **Satheesh, P.**, Blecha, L., & Kelley, L. *Mergers, recoil and slingshot in triple massive black hole systems*, **The era of binary supermassive black holes**, **Aspen Center for Physics**, February 2025
- **Satheesh, P.**, Blecha, L., & Kelley, L. *Studying gravitational wave and slingshot recoil of massive black holes in cosmological simulations*, **Nanograv Fall collaboration meeting**, **University of Michigan**, October 2024
- **Satheesh, P.**, Gandhi, S., & Mishra, C.K. *Fisher analysis of eccentric binaries with higher mode frequency domain inspirals*, **LIGO-Virgo-KAGRA collaboration meeting (virtual)**, March 2022
- **Satheesh, P.**, Saha, P., Schmid, H. *A spectropolarimetric method for predicting the gravitational wave polarization of LISA verification binaries*, **237th American Astronomical Society meeting**, 2021

## PROFESSIONAL MEMBERSHIPS

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Associate Member, <a href="#">Nanograv collaboration</a>	2024 - Present
Graduate Member, <a href="#">American Astronomical Society</a>	2023 - Present
Graduate Member, <a href="#">American Physical Society</a>	2022-2023
Member, <a href="#">LIGO Scientific Collaboration</a>	2021 - 2022

## TECHNICAL SKILLS

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<b>Programming Languages</b>	Python, C/C++
<b>Software &amp; Tools</b>	Mathematica, LaTeX, Git, GitHub, Shell scripting, hpg
<b>High Performance Computing</b>	Slurm, OpenMP
<b>Python Packages</b>	Pandas, Matplotlib, Numpy, Scipy, Astropy, Scikit-learn
<b>Operating Systems</b>	Linux, Windows, macOS

## TEACHING EXPERIENCE

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Teaching Assistant, <b>Code-Astro 2023</b> <i>Taught sessions at this software engineering workshop for astronomy supported by the Heising-Simons Foundation.</i>	Summer 2023
Teaching Assistant, <b>Physics-1 with calculus lab</b> <i>Introductory laboratory course for undergraduates taking Physics I with calculus at the University of Florida.</i>	2022-2023
Grader, <b>Complex Networks</b> <i>Graduate-level course at IIT Madras.</i>	Spring 2021

## SCIENCE COMMUNICATION AND OUTREACH

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### Service

- Organizer, **Comscicon Flagship Workshop** 2025
- Writer and Illustrator, **ComSciWri** 2025 - Present
- Author, **Astrobites** 2023-2025
- Organizer, **Physics Graduate Community** 2023-Present
- Head, **Horizon: The Physics and Astronomy Club of IIT Madras** 2019-2020

### Science-communication pieces

- Comic on massive black hole formation 2024  
[The Origin Story of Supermassive Black Holes](#), ClubSciWri

- Science article featured in AAS Nova 2024  
*Twinkle twinkle trail of stars how I wonder what you are*
- Astrobites articles written by me. 2023-2025

### Talks

- *Scripting the origin story of supermassive black holes* Sep 2024  
Graduate Student and Postdoc Seminar at UF Physics
- *It takes three to tango: Massive black hole triples and the final parsec problem* Sep 2023  
Graduate Student Postdoc Seminar at UF Physics
- *Python for Astronomy*, An Youtube lecture series offered by me as part of Horizon Jul 2020
- *Relativity and Gravitation*, Horizon-IITM Summer School July 2021
- *Analysis of Globular Clusters Using Colour-Magnitude Diagrams*, Shaastra IITM Jan 2020

### WORKSHOPS ATTENDED

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| Nanograv Astrophysics working group hack week, UC Berkeley    | 2025 |
| Nanograv student workshop, Michigan                           | 2024 |
| Comscicon flagship workshop, Boston                           | 2024 |
| ICTS Summer School on Gravitational Wave Astronomy            | 2023 |
| School on Black Holes and Gravitational Waves, Chennai, India | 2022 |
| Physics of the Early Universe, ICTS (Online)                  | 2020 |