



Pavan Vynatheya

PhD student/researcher,
MPA Garching

- ✉ MPA, Garching, Germany
- 🌐 <https://www.mpa.mpa-garching.mpg.de/pavanvyn/>
- @ pavan.vynatheya@gmail.com
- 🇮🇳 Indian
- 🗣 English, Kannada, Tamil, Hindi

About Me

I received my BS-MS dual degree in Physics at IISER Kolkata, India. Currently, I am pursuing my PhD in the Multiple Star Evolution group at Max-Planck-Institut für Astrophysik, Garching, Germany.

Technical Skills

- </> Programming languages
 - ✦ Proficient in Python
 - ✦ Working knowledge of C, C++,
 - ✦ MATLAB, Mathematica
- 🌐 Web development
 - ✦ Proficient in HTML, CSS, Javascript
 - ✦ Basics of PHP, MySQL

Research Experience

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|-----------------------|--|-----------------------------|
| Sep, 2020 – present | MPA, Garching, Germany
Compact object mergers in quadruple-star systems; Dynamical stability of triple- and quadruple-star systems (<i>PhD projects</i>) | Dr. Adrian Hamers |
| Aug, 2019 – May, 2020 | IUCAA Pune, India
Multiple pattern speeds in barred galaxies (<i>Master thesis</i>) | Prof. Kanak Saha |
| May – Aug, 2019 | Western University, London, Canada
Comparison of real and simulated galaxies using Deep Learning (<i>Summer internship</i>) | Prof. Pauline Barmby |
| May – Jul, 2018 | INAF OAB, Merate, Italy
Study of low frequency Quasi-Periodic Oscillations in accreting black hole binaries (<i>Summer internship</i>) | Prof. Tomaso Belloni |
| May – Jul, 2017 | ARIES Nainital, India
Identification of Young Stellar Objects using Spitzer archive data (<i>Summer internship</i>) | Dr. Saurabh Sharma |
| Jun – Jul, 2016 | IIAP, Bangalore, India
Verification of star clusters using Colour-Magnitude Diagrams (<i>Summer internship</i>) | Prof. Annapurni Subramaniam |

Education

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|----------------|--|
| 2020 – present | Max-Planck-Institut für Astrophysik, Garching, Germany (IMPRS Munich program)
PhD in computational stellar dynamics and evolution |
| 2015 – 2020 | Indian Institute of Science Education and Research (IISER) Kolkata, India
BS-MS Physics major + Mathematics minor
Final CGPA 9.19 (in a scale of 0-10) |
| 2013 – 2015 | KLE Independent PUC, Bangalore, India
Classes 11-12 |
| 2003 – 2013 | Sri Vani Public School, Bangalore, India
Classes 1-10 |

Publications

- (Submitted to MNRAS) **Vynatheya, P.**; Hamers, A. S., Mardling, R. A., Bellinger, E. P.: *Algebraic and machine learning approach to hierarchical triple-star stability*. 2022, arXiv:2207.03151
- Vynatheya, P.**; Hamers, A. S.: *How important is secular evolution for black hole and neutron star mergers in 2+2 and 3+1 quadruple-star systems?*. 2021, ApJ, 926, 195
- (Submitted to MNRAS) **Vynatheya, P.**; Saha, K.; Ghosh, S.: *Multiple pattern speeds in a long peanut-shaped bar in a simulated galaxy*. 2021, arXiv:2105.03183
- Hamers, A. S.; Rantala, A.; Neunteufel, P.; Preece, H.; **Vynatheya, P.**: *Multiple Stellar Evolution: a population synthesis algorithm to model the stellar, binary, and dynamical evolution of multiple-star systems*. 2021, MNRAS, 502, 4479
- Bogensberger, D.; Ponti, G.; Jin, C.; Belloni, T. M.; Pan, H.; Nandra, K.; Russell, T. D.; Miller-Jones, J. C. A.; Muñoz-Darias, T.; **Vynatheya, P.**; Vincentelli, F.: *An underlying clock in the extreme flip-flop state transitions of the black hole transient Swift J1658.2-4242*. 2020, A&A, 641, A101

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Soft Skills



Teamwork

- ✈ Part of IISER Kolkata fest core committee 2016 – 2017
- ✈ Part of IISER Kolkata event organisations 2015 – 2016



Leadership

- ✈ Head of IISER Kolkata music club 2016 – 2017
- ✈ Head of IISER Kolkata fest web design team 2016 – 2017



Communication

- ✈ Part of a paper presentation club to improve vocational skills

Scholarships and Awards

Jul, 2022

Kippenhahn Prize

Best PhD student paper in 2021 at the Max-Planck-Institut für Astrophysik, Garching, Germany

May – Aug, 2019

Mitacs Globalink

Summer Research fellowship at Western University, London, Canada

May – July, 2017

Indian Academy of Sciences

Summer research fellowship at ARIES Nainital, India

2015 – 2020

DST INSPIRE

Five-year BS-MS fellowship at IISER Kolkata, India

Conferences and Schools

Jul, 2022

Summer School for Astrostatistics

University of Crete, Heraklion, Greece

May, 2022

Growing Black Holes: Accretion and Mergers

Hotel Radisson, Kathmandu, Nepal

Jan, 2022

Dynamical Formation of Gravitational Wave Sources

Aspen Center for Physics, Aspen, United States

Aug, 2021

Summer School on Gravitational Wave Astrophysics

NBIA, Copenhagen, Denmark

Mar, 2021

TRiple Evolution and Dynamics 3

Northwestern University, Evanston, United State (held online)

Jun, 2019

CASCA (Canadian Astronomical Society) meet

McGill University, Montreal, Canada

Dec, 2018

IIST Astronomy and Astrophysics School

IIST, Thiruvananthapuram, India

Feb, 2017

Telescope making workshop

IISER Kolkata, India

Dec, 2015

Vijyoshi Science Camp

IISER Kolkata, India (and IISc, Bangalore, India)

University coursework

Basic (Phy)

Condensed matter physics, Astrophysics, Computational physics

Intermediate (Phy)

Electromagnetism, Quantum field theory, High energy physics, Waves and optics

Advanced (Phy)

Classical mechanics, Quantum mechanics, General relativity, Statistical mechanics, Mathematical methods

Basic (Math)

Linear algebra, Real analysis, Graph theory, Probability and statistics

Advanced (Math)

Algebra, Differential geometry, Algebraic topology