

ARYAN BHAKE

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EDUCATION

- **Indian Institute of Technology Indore** *July 2023 - May 2025*
M.Sc Astronomy *CPI : 8.57 (current)/10*
- **M.S. Ramaiah University of Applied Sciences** *Oct 2020 - May 2023*
B.Sc (Hons) Physics *CPI : 8.83/10*
- **G.H. Raison Vidyaniketan, Nagpur** *May 2018 - June 2020*
Class: 12th *Percentage: 87.2%*
- **Bhavan's B.P. Vidya Mandir, Nagpur** *May 2008 - June 2018*
Class: 10th *Percentage: 91.4%*

RELEVANT COURSES

1. **Physics and Astronomy**
General relativity & cosmology, Astrophysical fluids & plasma, Electrodynamics, Quantum mechanics, Heat & thermodynamics, Waves & Oscillations, Solid state physics, Galactic & extragalactic astronomy, Computational astrophysics, Astrostatistics, Radio astronomy, Electronics
2. **Mathematics**
Complex Analysis, Multivariable Calculus, Advanced Linear Algebra, Tensor Calculus, ODEs & PDEs

WORK/RESEARCH EXPERIENCE

- **Research Consultant at WorldQuant** *May 2024- present*
Key work: Developed quant algorithms 'Alphas'
Gold certificate in IQC alpha competition
- **M.Sc Thesis** *May 2024- May 2025 (expected)*
Title: Numerical modelling of binary black hole dynamics in Active Galactic Nuclei discs.
Supervisor: Dr. Bhargav Vaidya
Key work: Hydrodynamical simulation of binary system with PLUTO code.
Calculation and analysis of torque exerted on the system.
Analysis of inspiral phase of binary merger and generation of corresponding GW waveforms.
- **B.Sc Dissertation** *Jan 2023- May 2023*
Title: Exploring the correlation between Black Hole Mass, Radio luminosity and X-ray luminosity.
Supervisor: Dr. Abhijeet Borkar
Key work: Studied Fundamental Plane relation of Black holes.
Analysed data from SDSS, VLA and XMM-Newton using Python and Topcat to check FP relation.
- **Science Project** *Mar 2021- May 2021*
Title: Comparative Study of Pulsars Based On Emission Mechanism
Supervisor: Dr. Sundar M N
Key work: Studied various emission models for Pulsars.
Analysed data from ATNF catalogue and SIMBAD to classify pulsars according to measured spectra.

PUBLICATIONS

- **Scientific Article** *April 2022*
Title: Possible Relations between Fast Radio Bursts and Gamma Ray Bursts DOI

CONFERENCE/WORKSHOPS

- **Recent Trends in the study of Compact Objects :Theory and Observation (RETCO-VI)**
Poster*: Numerical modelling of binary black hole dynamics in Active Galactic Nuclei discs.
Conducted by: IIT Indore *10th - 12th Mar 2025*
- **33rd meeting of Indian Association for General Relativity and Gravitation (IAGRG)**
Talk: Numerical modelling of binary black hole dynamics in Active Galactic Nuclei discs.
Jointly conducted by: IAGRG and BITS Pilani *02nd - 04th Jan 2025*
- **8th Aditya-L1 Science Support Cell (AL1SSC)-2024 Workshop**
Member of Organizing committee
Learnt about different payloads aboard Aditya L-1 satellite such as ASPEX, PAPA and MAG.
Jointly conducted by: ISRO, ARIES and IIT Indore *27th - 29th Sept 2024*
- **DST- National Science Camp held at Amravati 2018** *9th-11th Dec 2018*

KEY SKILLS

Programming: Python, PLUTO, C/C++, Matlab
Softwares and Frameworks: MS Office, Latex, Sci-server, CLEA, VisIt
Language: English, Hindi, Marathi

ACHIEVEMENTS

- **Joint Admission for Masters in IIT (JAM)-2023** Qualified All India Rank (AIR) 490
Conducted by IITs on behalf of
Ministry of Education (MoE), Government of India
- **Graduate Aptitude Test in Engineering (GATE)-2023 PHYSICS** Qualified AIR 1531
Conducted by National Coordination Board-GATE,
The Department of Higher Education, Ministry of Education (MoE),
Government of India.
- **Joint Entrance Examination Advanced (JEE Advanced)-2020** Qualified
Entrance examination for IITs and IISERs
- **Apoorva Joshi Best All-rounder Student Award** 2018

EXTRA-CURRICULAR

1. **Chief Editor, Astroria Magazine, Astronomy club, IIT Indore**
2. **Sports:** Football, Cricket, Chess
3. **Hobbies:** Quizzing, Board games, Movies

REFEREES

Dr. Bhargav Vaidya

Associate Professor

Department of Astronomy, Astrophysics

& Space Engineering

IIT Indore, India

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Dr. Abhijeet Borkar

Research Scientist

Astronomy Institute of the Czech Academy
of Sciences

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Dr. Premakumar H.B

Professor

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