Ameen Ahsen Bin Sathar

4^{th} Year BSMS Student

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DOB: 20/07/2004

Education

- **IISER Thiruvananthapuram - Integrated BSMS** *2022 - 2027*
  Physics Major; Mathematics Minor
- **Harvest Institute of Science, Malappuram - Grade 12** *2020 - 2022*
  DHSE, Kerala - PCMB, Percentage: 98.42%, Distinction
- **Ideal Public School, Kochi - Grade 10** *2008 - 2020*
  CBSE, New Delhi, Percentage: 91.60%, Distinction

Research Interests

Computational Physics, Numerical Relativity, GW physics, Geometry, Observational Astronomy

Research Experience

Hierarchial likelihood and PN methods for SMBBH OJ287 blazar | Project
TIFR-M, IISERTVM *2026 - Present | India*

- with Prof. A Gopakumar, Tata Institute of Fundamental Research, Mumbai & Dr. Abhimanyu Susobhanan, IISER Thiruvananthapuram
- Overview on the fascinating research on the unique blazar OJ287 SMBBH system using PN methods, LC data for central engine, nHz GW and orbital dynamics.

Modification of ray-tracing code for testing GR near non-Kerr BHs | Internship
Fudan University, Shanghai (remote) *2025 | China*

- with Prof. Cosimo Bambi, Fudan University
- The work include rigorous learning of concepts in GR, Kerr and Johannsen metric, relativistic spectrums, disk models etc. It equipped me with learning GR, practicing mathematical approaches and relativistic calculations, programming skills, BLACKRAY software modification.

Critical behaviour of cascading networks| Internship
IISERTVM *2025 | India*

- with Dr. Senthilkumar, IISER Thiruvananthapuram
- I have learned concepts in network science starting from graph theory and was able to arrive at a potential publishable result in the behavior of cascading non-interdependent spatially embedded networks for particularly weighted connections.

Investigation on Halo Merger Histories | Internship
NIT-Calicut *2024 | India*

- with Prof. Rajesh Mondal, NIT Calicut
- This project involved me exploring the ΛCDM model and analyzing the time evolution of spacetime and halos using the C codes developed by my mentor. It equipped me with learning necessary theoretical foundations and programming skills for modeling a 3D simulation for particle mesh (PM) type universes etc.

Coursework:
IISERTVM: General Relativity, Astrophysics, Mechanics, Special Relativity, Quantum Mechanics I, II, Non-linear Dynamics, Condensed Matter I & II, Statistical Physics, QIT, Thermodynamics, Experimental Phy Lab, Real Analysis, General Topology, Electronics, Linear Algebra, Multi-variable Calculus, Probability, Organic and Inorganic Chemistry. **edX:** Intro to Python, Using Python for Research.

Workshops and Conferences

- European Einstein Toolkit Meeting, December 2025
- Gravitational Wave Open Data Workshop 2025, **GWOSC**
- Advances in Computational Astrophysics Symposium '25, Centre of HPC, IISERTVM
- AI/ML in Astronomy and Astrophysics workshop '24, **IUCAA**, Pune
- Winter '24, Spring '25, Summer '25 Conference in HEP & Astrophysics by Mr. Ibrahim Mirza
- **RAD@home** Astronomy Workshop, IISER-TVM
- **IOMN**-NASA '24, Observe the moon online workshop, Nalanda College, Sri Lanka
- Telescope Hands-on sessions, **Parsec**-IISERTVM
- **GSFK** Symposium and Science Fest 2024, Thiruvananthapuram
- Physics and Mathematics Seminars and Frontier Symposiums at IISERTVM

Work and Volunteer Experience

- Media Society IISERTVM | Decision Making Committee Head (2023-*Present*)
- Parsec, Astronomy Club, IISERTVM | Co-ordiinator (2023-*Present*)
- Sports Council, IISERTVM | DMC core member (2022-2023)
- Social: Project Aksharam (Trivandrum District Administration) | High-School Tutor (2023)

Skills

Technical:

- Programming: Python (NumPy, SciPy, SymPy, AstroPy, gnuplot, Pandas), C++, LaTeX, MATLAB, Data Handling, HPC, UNIX
- Digital Photovideography and Editing, Beginner Blender

General:

- Critical Analysis, Observation, Listening, Problem Solving, Team-management, Multi-tasking

Achievements

- JEE-Advanced 2022: OBC AIR 6712 among 1.1 million participants
- Appeared for SSB-Bhopal (NDA-August 2022)
- Qualified KEAM, VITEEE, CUSAT-CAT, NEET, NDA, IAT.
- Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship
  Department of Science and Technology, India ; Amount: $6000
- School Topper - CBSE Matriculation Exam
- Sports Awards

Other Interests

Football, Athletics, Chess, Writing, Nature, Videography, Photography, Pencil Drawing