

Noor-E-Tasnim Hiya

Undergraduate Physics Student

Department of Mathematics and Physical Sciences, BRAC University

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github.com/estrellaheron271203-png | estrellaheron271203-png.github.io

Education

B.Sc. in Theoretical Physics, Department of Mathematics and Physical Sciences, BRAC University.

Expected graduation: 2027

CGPA: 3.85/4.00.

Relevant Coursework

Quantum Mechanics I
General Relativity
Classical Electrodynamics
Group Theory
Optics
Waves

Quantum Mechanics II
Black Holes
Statistical Mechanics
Linear Algebra
Classical Mechanics
Quantum Computing I

Quantum Mechanics III
Cosmology and Astrophysics
Mathematical Physics
Complex Analysis
Thermal Physics
Numerical Methods

Ongoing Project

Primordial Black Holes from String Cosmological Models

2026–Present

Undergraduate Thesis / Research Project, Department of Mathematics and Physical Sciences, BRAC University

- Working with **Dibya Chakraborty, Ahmed Rakin Kamal, Sayeda Tashnuba Jahan, Mariem Absar, and Saif Ar Rasul** on primordial black hole formation in string-cosmological models.
- Studying how inflationary dynamics and model parameters shape the primordial curvature power spectrum and lead to PBH formation through gravitational collapse, with emphasis on the formation/origin side of PBHs.

Academic Projects

Primordial Black Holes: Formation, Evaporation and Cosmological Implications

2025

Academic Literature Review, Department of Mathematics and Physical Sciences, BRAC University

- Co-authored a **45-page literature review** covering PBH formation, evaporation, cosmological constraints, dark-matter implications, and key theoretical foundations including inflationary cosmology and black-hole physics.
- View PDF**

Modeling Air Depressurization Dynamics in Pressurized Space Habitats

2024

University Physics Competition (UPC) 2024

- Collaborated in an interdisciplinary Physics, Computer Science, and EEE team to model pressure decay following a micrometeorite-induced puncture in a pressurized space station, and co-authored a **17-page technical report**.
- View PDF**

Awards and Honours

2026	Top 15% of Participants , International Astronomy and Astrophysics Competition (IAAC).
2025	BRAC University Merit Scholarship – 25% tuition waiver based on academic performance.
2023	Bronze Honour , International Astronomy and Astrophysics Competition (IAAC), awarded to the top 25% of participants worldwide.
2021	Best of Best Award Drawing, “Colour Your Thoughts” category, Carnival Did Creativity 0.1.
2020	2nd Position , Glimpse Story, Senior Category, Adventure Resumption 2.0.
2018	Second Runner-up , Regional Biology Olympiad.

2018 **1st Position**, Essay Writing, D Category, International Mother Language Day competition.

Scientific Programs and Training

- 2025** **Jamal Nazrul Islam Memorial Winter School on Physics**, BRAC University / ICTP Physics Without Frontiers – Participant and Volunteer Organizer.
- 2021** **International Astronomical Search Collaboration (IASC)** – International Asteroid Search Campaign; performed CCD-image analysis, asteroid detection, and astrometric measurements using **Astrometrica**.
- 2025** **Introduction to Robotics** – Six-week course covering robotics fundamentals, sensors, embedded systems, and microcontroller applications.

Academic Service, Outreach and Organization

- 2023–Present** **Merul-Badda Talks in Mathematics and Physics** – Volunteer / Organizing Team. Assisted with the organization of mathematics and physics seminars and public lectures featuring national and international researchers; contributed to event logistics and social media management.
- 2025** **Jamal Nazrul Islam Memorial Winter School** – Volunteer Organizer. Assisted with participant registration, coordination, logistics, and social media management and promotional content.
- 2023** **Bangladesh National Girls' Mathematics Olympiad** – Volunteer. Assisted with participant registration and event logistics.

Technical Skills

Programming and Scientific Computing: Python, NumPy, Matplotlib

Scientific Software: Astrometrica, Arduino IDE

Mathematical Tools: $\text{\LaTeX}$, mathematical modelling, numerical simulation, data analysis

Professional Experience

- 2026** **Physics Without Frontiers (PWF) Internship Programme** – Ongoing research internship with **Dibya Chakraborty**.

References

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Dibya Chakraborty
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Ahmed Rakin Kamal
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