

Niyaz Uddin Molla



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PROFILE

- Teachers trained for 2 years in the B.Ed. Mathematics program from WBUTTEPA University.
- Collaborated with international researchers ranked among the top 2% of scientists in the global list.
- 15 research papers published in peer research journals, which are internationally acclaimed and have high impact factor. Communicated work in multiple international conferences.
- Experience in leading and generating new research ideas and solving problems.
- Passionate about mentoring, with experience in outreach programs supporting and exposing young students pursuing STEM fields. I have also mentored young researchers on various technical projects.
- Eager to adapt to new technologies and research assignments with a strong passion for learning. Experienced in leading and developing innovative research ideas, as well as managing astrophysical, cosmological, and space data for observational analysis.



EDUCATION

2024

Ph.D. – Cosmology & Astrophysics

Department of Mathematics, IEST, Shibpur, West Bengal, India

Title: [Relativistic Black Hole and Its various Astrophysical Consequences](#)

2019

B.Ed. -Mathematics, WBUTTEPA, WB, India

2017

M.Sc- Mathematics

University of Calcutta , WB, India

Specialization in Mathematics, Algebra ,Analysis and Geometry

WORK EXPERIENCE

AREA OF RESEARCH

- **Gravitational lensing and Shadow of black hole**
- Astrophysical phenomena in the presence of Dark energy, Dark matter halo.
- General Relativity and Modified theory of gravity tests.

TECHNICAL SKILLS

Operating System- Microsoft windows, Ubuntu(Linux)

Programming – Python, Mathematica, Maple , Matlab

- **Python libraries:** GDAL, NumPy, Pandas, SciPy, PySpark, Seaborn, Tensorflow, GeoPandas, Matplotlib, LiDar

COURSES TAUGHT (Undergrad University level)

- Algebra
- Analysis
- Geometry
- Mathematical Physics
- Statistical Mechanics
- Black hole, Wormhole
- Astrophysics
- Astronomy



PUBLICATIONS

Publication link: <https://inspirehep.net/authors/1951729>

1. Niyaz Uddin Molla and Ujjal Debnath, “Strong gravitational lensing by Kerr-Newman-NUT-Quintessence black hole”, *International Journal of Modern Physics A* , vol. 36, no. 7, p. 2150210, 2021. DOI: 10.1142/S0217751X21502109.
2. Niyaz Uddin Molla and Ujjal Debnath, “Shadows and Strong Gravitational Lensing by Van der Waals Black Hole in Homogeneous Plasma”, *Annals of Physics* , vol.453, no. 169304, 2023. DOI: 10.1016/j.aop.2023.169304.
3. Niyaz Uddin Molla and Ujjal Debnath, “Gravitational Lensing of Acoustic Charged Black Hole”, *The Astrophysical Journal* , vol. 947, no. 1, p. 14, 2023. DOI:10.3847/1538-4357/acb6f2.
4. Niyaz Uddin Molla, Himanshu Chaudhary, G. Mustafa, Farruh Atamurotov, Ujjal Debnath, Dhruv Arora, “Strong Gravitational Lensing by Sgr A* and M87* Black Holes embedded in Dark Matter Halo exhibiting string cloud and quintessential field”, *European Physical Journal C* , vol. 84, no. 6, p. 574, 2024. DOI: 10.1140/epjc/s10052-024-12917-0.
5. Niyaz Uddin Molla and Ujjal Debnath, “Destroying Kerr–Newman-Nut-Quintessence black hole”, *Modern Physics Letters A* , vol. 37, no. 06, p. 2250037 ,2022, DOI: 10.1142/S0217732322500377.
6. Niyaz Uddin Molla and Ujjal Debnath, “Destroying general family of rotating and accelerating charged Plebanski-Demianski black holes”, *International Journal of Modern Physics A* , vol. 37, no. 16, p. 2250103,2022. DOI: 10.1142/S0217751X22501032.
7. Niyaz Uddin Molla and Ujjal Debnath, “Gravitational lensing for power-maxwell charged quintessence black hole in Rastall gravity”, *International Journal of Geometric Methods in Modern Physics* , vol. 19, no. 12, p. 2250183, 2022. DOI: 10.1142/S0219887822501833.
8. Ujjal Debnath, Niyaz Uddin Molla, Anirudh Pradhan, “Noncommutative wormhole in non-minimal curvature-matter coupling of $f(R)$ gravity with Gaussian and Lorentzian distributions”, *International Journal of Geometric Methods in Modern Physics* , vol. 20, no. 12, p. 2350214, 2023. DOI: 10.1142/S0219887823502146.
9. Himanshu Chaudhary, Amine Bouali, Niyaz Uddin Molla, Ujjal Debnath, G. Mustafa, “Cosmological tests of $f(R, G, T)$ dark energy model in FRW universe”, *European Physical Journal C* , vol. 83, no. 10, p. 918, 2023. DOI: 10.1140/epjc/s10052-023-12094-6.

10. Dhruv Arora, Niyaz Uddin Molla, Himanshu Chaudhary, Ujjal Debnath, Farruh Atamurotov, G. Mustafa, “Exploring Tidal Force Effects and Shadow Constraints for Schwarzschild-like Black Hole in Starobinsky-Bel-Robinson Gravity”, *European Physical Journal C* , vol. 83, no. 11, p. 995, 2023. DOI: 10.1140/epjc/s10052-023-12185-4.
11. Himanshu Chaudhary, Niyaz Uddin Molla, Madhur Khurana, Ujjal Debnath, G. Mustafa, “Cosmological Test of Dark Energy Parametrizations in Horava-Lifshitz Gravity”, *European Physical Journal C* , vol. 84, no. 3, p. 223, 2024. DOI: 10.1140/epjc/s10052-024-12504-3.
12. Niyaz Uddin Molla, Amna Ali, Ujjal Debnath, Saraswathy Shamini Gunasekaran, “Investigating the shadows and strong gravitational lensing of modified Bardeen black holes”, *Physica Scripta* , vol. 99, no. 7, p. 075019, 2024. DOI: 10.1088/1402-4896/ad52cd.
13. Niyaz Uddin Molla, Himanshu Chaudhary, G. Mustafa, Ujjal Debnath, S.K. Maurya, “Strong gravitational lensing, quasi-periodic oscillations and constraints from EHT observations for quantum-improved charged black hole”, *European Physical Journal C*, vol. 84, No. 4, p. 390 , 2024. DOI: 10.1140/epjc/s10052-024-12679-9.
14. Himanshu Chaudhary, Ujjal Debnath, Shibesh Kumar Jas Pacif, Niyaz Uddin Molla, Ghulam Mustafa, Sunil Kumar Maurya, “ Observational Constraints on the Parameters of Hořava–Lifshitz Gravity”, *Annalen der Physik*, p.2400181, 2024. DOI: 10.1002/andp.202400181.
15. Testing gravitational lensing effects by supermassive massive black holes with superstring theory metric: Astrophysical implications and EHT constraints, Niyaz Uddin Molla, Sushant G. Ghosh ,Ujjal Debnath ,*Phys.Dark Univ.* 44 (2024) 101495



TALKS DELIVERED

- International Conference on Theoretical Physics and Astrophysics (ICTPA), (13-18 May, 2024 at Tashkent, Uzbekistan.
- A course on gravitational wave astronomy, Global initiative of academic networks (GIAN) (23– 29, November, 2023), at Centre of Theoretical Physics, Jamia Millia Islamia, New Delhi, India.



REFERENCES

1. Dr. Ujjal Debnath

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3. Dr. Ghulam Mustafa

Assistant Professor

Department of Physics.

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