

Sheikh Riasat

PhD Researcher · Theory of Elementary Particles

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Education

- Apr 2024 - Present **PhD (Physics)** Japan
Kyushu University, Fukuoka
- Lab: Theory of Elementary Particles
 - Investigating QG effects on BSM Physics
 - Development of theoretical framework based on RGUP
 - **Funding:** Ministry of Education, Culture, Sports, Science and Technology (MEXT) Scholarship, 2024
- Jun 2020 - Jul 2022 **Master of Science (Physics)** India
Banaras Hindu University, Varanasi
- Specialization: Nuclear and Particle Physics
 - Graduated with First Division, Distinction, Gold Medal, and First Position
 - **Key Courses:** Particle Physics, Weak Interaction & Electroweak Unification, Quantum Field Theory, Methods in Theoretical Physics, Advanced Quantum Mechanics, Computational Physics.
- Jun 2016 - Jul 2019 **Bachelor of Science (Physics)** India
Cotton University, Guwahati
- Graduated with First Division
 - Major in Physics, Minor in Mathematics and Chemistry
 - **Key Courses:** Classical Mechanics, Special Theory of Relativity, Quantum Mechanics, Mathematical Physics, Nuclear and Particle Physics, Radiation Theory, Statistical Mechanics.

Research Experience

- Aug 2022 - Mar 2023 **Research Assistant** India
(8 months) **Banaras Hindu University, Varanasi**
- Worked on a research project funded by the IoE Scheme (Number 6031) at Department of Physics, Banaras Hindu University, Varanasi.
- Jul 2007 - Oct 2007 **Student Researcher** India
(5 months) **National Children's Science Congress, Assam**
- Contributed to a research project for the 15th National Children's Science Congress, State Level Children's Science Congress, Assam.
 - Organized by Assam Science Technology and Environment Council (ASTEC), Bharat Jana Vigyan Jatha (BJVJ), Assam, and Society for Socio-Economic Awareness and Environment Protection (SSEAEP), GHAROA, Lumding.
 - Supported by Rashtriya Vigyan Pradyogiki Sanchar Parishad (RVSP) and Department of Science & Technology, Govt. of India, New Delhi.

Honors & Awards

International

- Apr 2024 **Ministry of Education, Culture, Sports, Science and Technology (MEXT) Scholarship** Japan
Awarded by the Japanese Government for PhD in Japan

National

- Nov 2022 **Prof. Ashwani Kumar Nigam Memorial Gold Medal** India
Awarded for securing highest marks in MSc Physics - Nuclear and Particle Physics
- Oct 2021 **Elite Certification** India
Achieved in Introduction to Research NPTEL course
- Apr 2021 **Elite + Silver Certification** India
Attained in Electronic Theory of Solids NPTEL course
- Oct 2010 **Participant in Bijan Jyoti Jatra** India

May 2008	Selected for the Scientific Excursion by Train organized by ASTEC & DST, Govt. of Assam Winner of Scientific Model competition	India
Jun 2007	On the program Science Festival organized by Assam Science Society Winner of Essay writing competition	India
	On Conservation of Nature and Natural Resources conducted by Aaranyak	

Projects

Aug 2022 - Mar 2023	Gravity, Minimal Length and Quantum Phenomena Banaras Hindu University, Varanasi	India
	<ul style="list-style-type: none"> • Research conducted under the research grant for faculty under IoE Scheme (Number 6031). • Investigated Generalized Uncertainty Principle (GUP) quantization of Electromagnetic (EM) radiation fields. • Computed corrections to the Einstein and Debye specific heat model using modified EM quantization, leading to observed changes in the dispersion relation of elastic waves. • Technical Skills: Mathematica, LaTeX. • Soft Skills: Time Management, Presentation skills, Research paper writing. 	
Jul 2007 - Oct 2007	Ecology and Conservation Strategy of Bats in Rural Areas National Children's Science Congress, Assam	India
	<ul style="list-style-type: none"> • Conducted surveys and collected data on Bats and their habitats in a selected zone. • Identified collected bats and recorded plant species data. • Analyzed data to identify trends between bat species, favored habitats, and foraging plants. • Technical Skills: Data management and analysis, Field survey. • Soft Skills: Report writing, Logical and Critical Thinking, Presentation skills. 	

Publications

Journal Articles

Riasat, S., Mandal, B. P., Effect of quantum gravity on specific heat of solid. The European Physical Journal Plus **138**(10), 943 (2023)
<https://doi.org/10.1140/epjp/s13360-023-04585-y>

Theses

May 2022	Effect of Gravity in Quantum Mechanics MSc Physics, Banaras Hindu University, Varanasi	India
	<ul style="list-style-type: none"> • Abstract: All possible theories of quantum gravity suggest the existence of a minimal length. Therefore, the usual Heisenberg uncertainty principle (HUP) is replaced by a more general uncertainty principle known as the generalized uncertainty principle (GUP). The dynamics of all quantum mechanical system gets modified due to GUP. In this work, we consider various quantum mechanical phenomena and review the correction to their respective Hamiltonian and energy levels. GUP modified quantization of a particle inside a box potential indicates that the space is quantized in the units of $\alpha_0 l_p$ predicting an upper bound of the GUP parameter α_0. Furthermore, the modified Landau levels, simple harmonic oscillator (SHO) and Lamb shift also results in an upper bound of the GUP parameter. Apart from these, we review a relativistic quantum mechanical phenomenon, Dirac oscillator under the effect of magnetic field which is non-oscillating at a certain value of magnetic field even under the effect of gravity. • Technical Skills: Mathematica, LaTeX. • Soft Skills: Time Management, Presentation skills, Thesis writing. 	

Additional Education

Summer Schools

May 2021 - Jun 2021	Introductory Summer School in Astronomy and Astrophysics The Inter-University Centre for Astronomy and Astrophysics, IUCAA, Pune	India
Jun 2017 - Jul 2017	Cotton University Astronomy & Astrophysics Summer School 2017 Department of Physics, Cotton University, Guwahati	India

Diplomas & Courses

Apr 2024 - Jul 2024	Japanese Training for Advanced Studies (JTAS) Kyushu University , Fukuoka	Japan
Aug 2021 - Oct 2021	Introduction to Research NPTEL Course (Funded by the Ministry of HRD, Govt. of India)	India
Jan 2021 - Apr 2021	Electronic Theory of Solids NPTEL Course (Funded by the Ministry of HRD, Govt. of India)	India
Jul 2019 - Jul 2020	Post Graduate Diploma in Computer Application (PGDCA) NECEP Institute of Management & Technology, Assam	India

Professional Training

Seminars

Nov 2013	National Seminar titled “Plasma Science and Technology” Sponsored by UGC and organized by Dept. of Physics, Nabajyoti College, Assam Student participant, no paper presented	India
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Extra Information

Computer Skills

Programming	Fortran, Python (Pandas, NumPy, matplotlib etc.), Wolfram Alpha, C/C++
Miscellaneous	LaTeX, Linux, Shell (Bash/Zsh), Git.
Softwares	Mathematica, Stellarium.

Languages

Assamese	Native
English	Fluent
Hindi	Fluent
Japanese	Intermediate