

Tabasum Rahnuma

Contact Information

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Education

- **Indian Institute of Science Education and Research, Bhopal, Madhya Pradesh, India**
Senior Research Fellow, *July 2019-Present*
Area of Research: Quantum Gravity and Celestial Holography.
Topic of Interest: Quantum Field theory, Gravitational Waves and Memory Effect, Black holes and Holography.
- **Utkal University** **Bhubaneswar, Odisha, India**
Master of Science in Physics, *July 2016-April 2018*
Specialization: Advanced Particle Physics and Field Theory
Programming Languages: Basic Fortran 77, C & C++.
- **Gopabandhu Science College, Odisha** **Cuttack, Odisha**
Bachelor of Science, *July 2012-April 2015*
Honors: Physics
- **CYBERNET, Odisha** **Cuttack, Odisha**
Post Graduate Diploma in Computer Education, *June 2012-July 2013*
- **Gopabandhu Science College** **Cuttack, Odisha**
Higher Secondary Education (CHSE), *May 2010-March 2012*
- **Govt. Girls' High School, Odisha** **Cuttack, Odisha**
Secondary Education, *April 2008-March 2010*

Schools/Workshops

- **17th Kavli Asian Winter School (KAWS) on Strings, Particles and Cosmology** **Institute for Basic Science, Daejeon**
Jan 9th - 18th, 2023
Attended in-person and presented a poster titled "Asymptotic Symmetries From Celestial CFT(Celestial Holography)".

- **Fundamental physics UK, Ministry of Education India Southampton University,**
2022 Chennai- Southampton Workshop *March 28th - 30th, 2022*
Holography, gauge theories and black holes.
- **Princeton Center for Theoretical Science New Jersey, United States**
Virtual Workshop on Celestial Holography '22 *Feb 1st - 4th, 2022*
Asymptotic symmetries, amplitudes, and CFT bootstrap methods.
- **Kavli Asian Winter School (KAWS) ICTS-TIFR, Bengaluru**
on Strings, Particles and Cosmology *Jan 10th - 23rd, 2022*
Blackhole information paradox, Gravitational S-Matrix, Holography, CFT, etc.
- **Abdus Salam International Centre for Theoretical Physics (ICTP) Trieste, Italy**
School on Superstring Theory and Related Topics *October 18th - 22nd, 2021*
Holography with Averaging, Aspects of the Swampland Symmetries, Anomalies and Topology.
- **Department of Physics, Utkal University, Odisha Bhubaneswar, Odisha**
Skill Development Workshop *March-2017- April-2017*
Instrumentation and Repairing of Basic Instruments.

Internships/Projects

- **School of Physical Science, NISER Bhubaneswar, Odisha**
Summer Project Programme *May 2017- July 2017*
Measurement of the strange B meson lifetime using decay channel $B_s^0 \rightarrow J/\Psi + \Phi$ at the CMS detector
 - Obtained the data analysis report of the Monte Carlo simulation.
 - Analyzed and generated reports of both real and simulated data.**Analysis Framework:** Root (RooFit)
- **Department of Physics, Utkal University, Odisha Bhubaneswar, Odisha**
Summer Research Project (DST-INSPIRE) *April 2014- June 2014*
Optical Property study of Arsenic Selenide Thin Film.
 - Characterisation of the thin film.
 - Generated XRD and UV spectroscopy report.

Teaching Experience

- **Department of Physics, IISER, Bhopal Bhopal, MP**
Teaching Assistantship *Jan 2020- present*
For BS-MS degree per semester courses on,
 - Mathematical Methods, 3rd year by Dr. Auditya Sharma.
 - Quantum Field Theory-I and II, 4th year by Dr. Arnab Rudra.
 - General Theory of Relativity, 4th year by Dr. Nabamita Banerjee.
 - Newtonian and Classical Mechanics, 3rd year by Dr. Nabamita Banerjee.
 - General Properties of Matter(GPM), 2nd year by Dr. Nabamita Banerjee.

Achievements

- **Joint CSIR-UGC Junior Research Fellowship (July 2019- Present)**
◦ , *Indian Institute of Science Education and Research, Bhopal, MP.*
- **Eligibility of Lectureship(NET) Exam (Dec 2018)**
◦ , *Joint CSIR-UGC NET Examination*
- **IMA Scholarship (2016-2018)**
◦ , *Institute of Mathematics and Applications (IMA), Bhubaneswar.*
- **Award of INSPIRE Scholarship for the year 2012 (1788/2012) (2013 –2015)**
◦ , *Innovation in Science Pursuit for Inspired Research (INSPIRE),
Department of Science & Technology (DST), New Delhi-110016.*
- **Certificate of Merit (01/2009)**
◦ , *Uranium Talent Search Examination (UTSE).*

Publications

- **"Asymptotic Symmetry of Four Dimensional Einstein-Yang-Mills and Einstein-Maxwell Theory"** Co-authored with Nabamita Banerjee, IISER, Bhopal, India and Ranveer Kumar Singh, NHETC and Department of Physics and Astronomy, Rutgers University, 126 Frelinghuysen Rd., Piscataway NJ 08855, USA.
{N. Banerjee, T. Rahnuma and R. K. Singh, "*Asymptotic Symmetry of Four Dimensional Einstein-Yang-Mills and Einstein-Maxwell Theory*," [https://doi.org/10.1007/JHEP01\(2022\)033](https://doi.org/10.1007/JHEP01(2022)033).}
- **"Soft and Collinear Limits in $N = 8$ Supergravity using Double Copy Formalism"** Co-authored with Nabamita Banerjee, IISER, Bhopal, India and Ranveer Kumar Singh, NHETC and Department of Physics and Astronomy, Rutgers University, 126 Frelinghuysen Rd., Piscataway NJ 08855, USA. <https://doi.org/10.48550/arXiv.2212.11480>.
- **"Asymptotic Symmetry algebra of $N = 8$ Supergravity"** Co-authored with Nabamita Banerjee, IISER, Bhopal, India and Ranveer Kumar Singh, NHETC and Department of Physics and Astronomy, Rutgers University, 126 Frelinghuysen Rd., Piscataway NJ 08855, USA. <https://doi.org/10.48550/arXiv.2212.12133>.