

Ankit Kumar

Postdoctoral Fellow | Technion - Israel Institute of Technology

Curriculum vitae
linktr.ee/ankit.xyz

Research Interests Quantum Information Science & Technology
 Computational Physics: Methods and Applications

EDUCATION & PROFESSIONAL EXPERIENCE

Postdoctoral Fellow	19.10.2025 – Present
<i>Technion - Israel Institute of Technology, Israel</i>	
Advisor: Asst. Prof. David Gelbwaser-Klimovsky	
Research Assistant	07.07.2025 – 03.10.2025
<i>Indian Institute of Technology Roorkee, India</i>	
Postdoctoral Fellow / Adiunkt	03.10.2023 – 19.04.2025
<i>International Centre for Theory of Quantum Technologies, Poland</i>	
Advisor: Prof. Michał Horodecki	
Ph.D. in Quantum Information Science	02.01.2018 – 13.07.2023
<i>Indian Institute of Technology Roorkee, India</i>	
Thesis: Entanglement Dynamics in Quantum Continuous–Variable States	arXiv:2405.07362
Advisor(s): Prof. P. Arumugam & Prof. Tomasz Paterek (Uni of Gdańsk, Poland)	
Awarded with an “Outstanding” in Mathematical and Computational Techniques	
M.Sc. in Physics 9/10, Distinction	2015 – 2017
<i>Indian Institute of Technology Roorkee, India</i>	
Thesis: A Qualitative Study of Rotating Neutron Stars	
Advisor: Assoc. Prof. P. Arumugam	
Rank 10 (percentile: 99.91) in GATE, 2017 Rank 86 in CSIR-UGC JRF, June 2016	
B.Sc. (H) Physics 88/100	2012 – 2015
<i>Hansraj College, University of Delhi, India</i>	
Project: Designing and Optimization of Auto-Tracking Solar energy-based Energy Conversion Module ...	
Advisor(s): Asst. Prof.(s) Amit Sehgal, Sushil Kumar, & Rajan Walia	[Best Innovation Idea Award]
Sr Secondary School - XI & XII 89/100 <i>CBSE, Baghpat 250609, India</i>	2010 – 2012
Secondary School – IX & X 9.4/10 <i>CBSE, Meerut 250501, India</i>	2008 – 2010

SPONSORED RESEARCH PROJECTS, FELLOWSHIPS & AWARDS

8. Publication Award for Article: CQG 41, 245014 (2024) ↔ Uni of Gdańsk, Poland	[PLN 640]
7. Publication Award for Letter: PRD 109, L101501 (2024) ↔ Uni of Gdańsk, Poland	[PLN 2250]
6. Gravitation and Entanglement in Quantum Superpositions	[MSCA Proposal 2023]
Host: Prof. Mauro Paternostro (Queen’s University Belfast, UK)	
Outcome: Marie Curie Seal of Excellence (certificate not awarded due to UK-EU Brexit legalities)	
5. Quantum Coherence and Nuclear Reactions <i>Nanyang Technological University, Singapore</i>	[Jan 17 - May 31, 2019] [NTU-India Connect Research Programme]
Advisor: Asst. Prof. Tomasz Paterek	

4. MHRD Fellowship for Doctoral studies \leftrightarrow *MHRD, Govt. of India* [Jan 2018 - Dec 2022]
3. Merit-cum-means Scholarship \leftrightarrow *IIT Roorkee, India* [2016 - 2017]
2. Designing and Optimization of Auto-Tracking Solar energy-based Energy Conversion . . . [Nov'13–Nov'14]
Dept. of Electronics, Hansraj College, Uni of Delhi, India
- PI(s): Asst. Prof.(s) Amit Sehgal, Sushil Kumar, & Rajan Walia
- Funding: INR 350,000 \leftrightarrow Innovation Project HR-207 \leftrightarrow **Best Innovation Idea** award
1. Central Sector Scheme Scholarship (CSSS) \leftrightarrow *CBSE & MHRD, Govt. of India* [2012-2016]

TEACHING

3. “Introduction to Quantum Mechanics” for Postgraduates [Oct 2024 - Feb 2025]
University of Gdańsk, Poland
2. Teaching assistant in “Experimental Physics for specially-abled students” [2020]
Indian Institute of Technology Roorkee, India
1. Teaching assistant in Computational Physics (FORTRAN & Python) [2019-2022]
Indian Institute of Technology Roorkee, India

LIST OF PUBLICATIONS

8. Micromagnons and long-range entanglement in ferrimagnetic ground states
 Marcin Więśniak, Ankit Kumar, and Idriss H.N. Ngueya
[Phys. Rev. B 112, 134425 \(2025\)](#)
7. Open quantum dynamics of Josephson charge pumps
Ankit Kumar, L. Cort, M. Łobejko, Alejandro Jenkins, Michał Horodecki
[New Journal of Physics 27, 104503 \(2025\)](#)
6. Correlations and signaling in the Schrödinger-Newton model
J.A. Gruca & Ankit Kumar, R. Ganardi, P. Arumugam, K. Kropielnicka, Tomasz Paterek
[Class. Quantum Grav. 41, 245014 \(2024\)](#)
5. Probing Modified Gravity with Entanglement of Microspheres
Ankit Kumar, Yen-Kheng Lim, P. Arumugam, Tom Złosník, Tomasz Paterek
[Phys. Rev. D 109, L101501 \(2024\)](#) Letter
4. Continuous-variable entanglement through central forces: application to gravity between quantum masses
Ankit Kumar, Tanjung Krisnanda, P. Arumugam, Tomasz Paterek
[Quantum 7, 1008 \(2023\)](#)
3. Pasta properties of the neutron star within effective relativistic mean-field model
 V. Parmar, H.C. Das, A. Kumar, Ankit Kumar, M.K. Sharma, P. Arumugam, S.K. Patra
[Phys. Rev. D 106, 023031 \(2022\)](#)
2. Constraining the parameterized neutron star equation of state with astronomical observations
 Jaikhomba Singha, S.M. Vaneshwar, Ankit Kumar
[Res. Astron. Astrophys. 23, 055001 \(2022\)](#)
1. Nonclassical trajectories in head-on collisions
Ankit Kumar, Tanjung Krisnanda, P. Arumugam, Tomasz Paterek
[Quantum 5, 506 \(2021\)](#)

SELECTED PRESENTATIONS

12. Energy conservation on quantum computing <i>NIT Delhi, India</i> ↔ STC Workshop on Silicon to Systems	Invited Talk 27 Aug 2025
11. Open system modeling for Josephson junction based nanodevices <i>IIT Roorkee, India</i> ↔ IPA Lecture Series	Invited Talk 07 Aug 2025
10. An open system approach to superconducting nanodevices <i>Xiamen University, Malaysia</i>	Invited Talk 04 Oct 2024
9. Current pumping with an unbiased SQUID <i>Uni of Maryland, USA</i> ↔ QTD Conference 2024	Poster 05-09 Aug 2024
8. Entanglement tests of gravity at quantum length scales <i>Uni of Gdańsk, Poland</i> ↔ KCIK Symposium on Quantum Information	Poster 16-18 May, 2024
7. Probing Modified Gravity with Entanglement of Microspheres <i>Uni of Gdańsk, Poland</i> ↔ Quantum Speedup Conference 2023	Talk 20-22 Nov 2023
6. Using Matrices to Solve the Time-Dependence of Quantum States <i>FCRIT - Uni of Mumbai, India</i> ↔ STTP Workshop on Quantum Computing	Invited Talk 14 Jan 2023
5. Millisecond Pulsars: astrophysics Course for undergraduate students <i>Xiamen University, Malaysia</i>	Invited Talk 19 Dec 2022
4. Entanglement based precision test of gravitational coupling at quantum length scales <i>NTU, Singapore</i> ↔ IPS Meeting 2022	Talk 28-30 Sep 2022
3. Computing gravity-mediated quantum entanglement in continuous variable bipartite states <i>IIT Roorkee, India</i> ↔ ISRACAM Conference 2022	Talk 20-24 Jun 2022
2. Quantum Dynamics of Fundamental Interactions <i>Chhatrasal Govt. PG College, India</i> ↔ National Webinar on Quantum Mechanics	Invited Talk 19 Jan 2021
1. Closest approach of a quantum projectile <i>Alagappa University, India</i> ↔ ICMMCMSE Conference 2022	Talk 22-24 Jan 2022

ACADEMIC REFEREES

- Prof. Michał Horodecki michal.horodecki@ug.edu.pl
International Centre for Theory of Quantum Technologies, University of Gdańsk, Poland

- Prof. Tomasz Paterek tomasz.patrek@ug.edu.pl
Institute of Theoretical Physics and Astrophysics, University of Gdańsk, Poland

- Prof. Paramasivan Arumugam arumugam@ph.iitr.ac.in
Department of Physics, Indian Institute of Technology Roorkee, India