

# Ankit Kumar

Postdoctoral Fellow | Technion - Israel Institute of Technology

Curriculum vitae  
[linktr.ee/ankit.xyz](https://linktr.ee/ankit.xyz)

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

## EDUCATION & PROFESSIONAL EXPERIENCE

Postdoctoral Fellow	19.10.2025 – Present
Technion - Israel Institute of Technology, Israel	
Advisor:	Asst. Prof. David Gelbwaser-Klimovsky
Research Assistant	07.07.2025 – 03.10.2025
Indian Institute of Technology Roorkee, India	
Postdoctoral Fellow / Adiunkt	03.10.2023 – 19.04.2025
International Centre for Theory of Quantum Technologies, Poland	
Advisor:	Prof. Michał Horodecki
Ph.D. in Quantum Information Science	02.01.2018 – 13.07.2023
Indian Institute of Technology Roorkee, India	
Thesis:	Entanglement Dynamics in Quantum Continuous–Variable States
Advisor(s):	Prof. P. Arumugam & Prof. Tomasz Paterek (Uni of Gdańsk, Poland)
Awarded with an “Outstanding” in Mathematical and Computational Techniques	<a href="#">arXiv:2405.07362</a>
M.Sc. in Physics      9/10, Distinction	2015 – 2017
Indian Institute of Technology Roorkee, India	
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
Hansraj College, University of Delhi, India	
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    CBSE, Baghpat 250609, India	2010 – 2012
Secondary School – IX & X      9.4/10    CBSE, Meerut 250501, India	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      [Jan 17 - May 31, 2019]  
*Nanyang Technological University, Singapore*      [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**

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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**

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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

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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

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- Prof. Michał Horodecki [michal.horodecki@ug.edu.pl](mailto:michal.horodecki@ug.edu.pl)  
*International Centre for Theory of Quantum Technologies, University of Gdańsk, Poland*  
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- Prof. Tomasz Paterek [tomasz.patrek@ug.edu.pl](mailto:tomasz.patrek@ug.edu.pl)  
*Institute of Theoretical Physics and Astrophysics, University of Gdańsk, Poland*  
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- Prof. Paramasivan Arumugam [arumugam@ph.iitr.ac.in](mailto:arumugam@ph.iitr.ac.in)  
*Department of Physics, Indian Institute of Technology Roorkee, India*