

Ankit Kumar

Postdoctoral Fellow @ Technion - Israel Institute of Technology, Israel

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
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 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
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
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
Secondary School – IX & X	9.4/10 CBSE, Meerut 250501, India

SPONSORED RESEARCH PROJECTS, FELLOWSHIPS & AWARDS

8. Publication Award for Article: CQG 41, 245014 (2024) ↔ <i>Uni of Gdańsk, Poland</i>	[PLN 640]
7. Publication Award for Letter: PRD 109, L101501 (2024) ↔ <i>Uni of Gdańsk, Poland</i>	[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]
<i>Nanyang Technological University, Singapore</i>	[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 Wiśniak, **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 Złosiński, 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 Worskhop 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> ↔ ICMCMSE 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.paterek@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