

CURRICULUM VITAE

1. **Name :** Tamal Guha
2. **Sex:** Male
3. **Nationality:** Indian
4. **Date of Birth:** 15th October, 1991
5. **Address for Communication:** 55 Baishali Park, Garia, Kolkata 700084,
West Bengal, India
6. **Email ID:** g.tamal91@gmail.com (primary), tamal@cs.hku.hk
7. **PhD Affiliation :** Physics and Applied Mathematics Unit, Indian Statistical Institute,
Kolkata (Reg. under The University of Calcutta)
8. **Master's Specialization :** Physics
9. **PhD thesis title :** Nonclassical features of quantum systems and their informatic
applications in thermodynamics.
10. **PhD Supervisor :** Prof. Preeti Parashar
11. **Details of Academic Qualifications:**

Board/ University	Name of Examination passed	Year of passing	Subjects
WBBSE	School Certificate Examination (10 th Level)	2007	Bengali, English, History, Geography, Mathematics, Life Science, Physical Science
WBCHSE	Pre Degree Examination (12 th Level)	2009	Physics, Chemistry, Mathematics, Biology, Bengali, English
University of Calcutta	B.Sc. (HONOURS)	2012	Physics (Honours) Subsidiary: Mathematics, Chemistry
Indian Institute of Technology, Guwahati	M.Sc.	2014	Physics
Indian Statistical Institute, Kolkata	Pre Ph.D. Course Work	2015	Computer Application & Statistical Methods, Research Methodology, Review, Mathematical Methods & Classical Mechanics, Quantum Information Theory and Quantum Field Theory

12. Academic Recognition/ Awards received:

Name of the Award	Awarding Agency	Year
Scholarship for Higher Education (SHE), INSPIRE, DST	Dept. of Science & Technology, Ministry of Science & Technology, Govt. of India	2009-13
JAM (Joint Admission Test for Masters) All India Rank 134	Indian Institute of Technology	2012

JEST (Joint Entrance Screening Test) All India Rank 72	JEST Board	2013
NET (National Eligibility Test) All India Rank 98	Council of Scientific and Industrial Research (CSIR), Govt. of India	June, 2013
JRF in Physics and Applied Mathematics (Among 3 of the selected candidates from all India)	Indian Statistical Institute	May, 2014

13. **Areas of Interest :** Quantum Information, Indefinite Causal Structure, Quantum Foundation, Quantum Thermodynamics

14. **Computer Skills :** Programming languages: C, C++, Fortran
Software Uses: Mathematica
Comfortable platform: Microsoft Office, LATEX
Operating systems: Linux, Windows

15. **Publications:** Attached separately.

(please see my [Google Scholar](#) page for updated information)

16. Teaching experience:

- (I) Some lectures on Quantum Computation, M. Tech (CS), at ISI Kolkata (2016-21).
- (II) Summer School on Quantum Information and Foundation, organized at ISI Kolkata (2015-21).
- (III) Lectures on Design Patterns: Quantum Algorithms, Indo Japan Joint Workshop on Quantum Computation and Information 2020, at ISI Kolkata.

17. Conferences and schools attended with talk/ posters:

- (I) Young Quantum 2015, Harish-Chandra Research Institute, Allahabad, India.
- (II) PAMR 2015, Indian Statistical Institute, Kolkata, India.
- (III) ISCQI 2016, Institute of Physics, Bhubaneswar, India.
- (IV) 2nd IMSc School on Quantum Information, Institute of Mathematical Science, Chennai, India.
- (V) PAMRM 2017, Indian Statistical Institute, Kolkata, India.
- (VI) 3rd ICQF 2017, National Institute of Technology, Patna, India.
- (VII) ISNFQC18, 2018, S. N. Bose National Center for Basic Sciences, Kolkata, India.
- (VIII) QIPA18, 2018, Harish-Chandra Research Institute, Allahabad, India.
- (IX) Quantum Thermodynamics for Young Scientists 2020, WE-Heraeus seminar, Bad Honnef, Germany.
- (X) Lectures on Design Patterns: Quantum Algorithms, Indo Japan Joint Workshop on Quantum Computation and Information 2020, Indian Statistical Institute, Kolkata.
- (XI) AQIS 2021, Japan.
- (XII) Quantum Speed Up 2021, University of Gdansk, Poland.
- (XIII) ICQIF 2022, Indian Statistical Institute, Kolkata

Published and communicated work

- [1] A. Roy, A. Mukherjee, **T. Guha**, S. Ghosh, S. S. Bhattacharaya and M. Banik, Nonlocal Correlations: Fair and Unfair Strategies in Bayesian Games, [Phys. Rev. A 94, 032120 \(2016\)](#)
- [2] M. Banik, S. S. Bhattacharaya, N. Ganguly, **T. Guha**, A. Mukherjee, A. Rai, and A. Roy, Two-Qubit Pure Entanglement as Optimal Social Welfare Resource in Bayesian Game, [Quantum 3, 185 \(2019\)](#)
- [3] M. Alimuddin, **T. Guha** and P. Parashar, Bound on Ergotropic Gap for Bipartite Separable States, [Phys. Rev. A 99, 052320 \(2019\)](#)
- [4] **T. Guha**, M. Alimuddin, and P. Parashar, Allowed and Forbidden Bipartite Correlations from Thermal States, [Phys. Rev. E 100, 012147 \(2019\)](#)
- [5] M. Banik, S. Saha, **T. Guha**, S. Agrawal, S. S. Bhattacharya, A. Roy and A. S. Majumder, Constraining the State Space in Any Physical Theory with the Principle of Information Symmetry, [Phys. Rev. A 100, 060101\(Rapid\) \(2019\)](#)
- [6] S. S. Bhattacharya, S. Saha, **T. Guha** and M. Banik, Nonlocality without Entanglement: Quantum Theory and Beyond, [Phys. Rev. Research 2, 012068 \(Rapid\) \(2019\)](#)
- [7] **T. Guha**, M. Alimuddin and P. Parashar, No-go Results in Quantum Thermodynamics, [Phys. Rev. A 101, 012115 \(2020\)](#)
- [8] **T. Guha**, M. Alimuddin and P. Parashar, Thermodynamic Advancement in the Causally Inseparable Occurrence of Thermal Maps, [Phys. Rev. A 102, 032215 \(2020\)](#)
- [9] M. Alimuddin, **T. Guha** and P. Parashar, Independence of Work and Entropy for Equal-energetic Finite Quantum Systems: Passive-state Energy as an Entanglement Quantifier, [Phys. Rev. E 102, 012145 \(2020\)](#)
- [10] M. Alimuddin, **T. Guha** and P. Parashar, Structure of Passive States and Its Implication in Charging Quantum Batteries, [Phys. Rev. E 102, 022106 \(2020\)](#)
- [11] S. Saha, S. S. Bhattacharya, **T. Guha**, S. Halder and M. Banik, Advantage of Quantum Theory over Nonclassical Models of Communication, [Ann Phys, 2000334 \(Rapid Research Letter\) \(2020\)](#)
- [12] **T. Guha**, B. Bhattacharya, D. Das, S. S. Bhattacharya, A. Mukherjee, A. Roy, K. Mukherjee, N. Ganguly and A. S. Majumdar, Environmental Effects on Nonlocal Correlations, [Quanta 8, 57 \(2019\)](#)
- [13] G. Chiribella, M. Banik, S. S. Bhattacharya, **T. Guha**, M. Alimuddin, A. Roy, S. Saha, S. Agrawal and G. Kar, Indefinite causal order enables perfect quantum communication with zero capacity channel, [New J Phys 23, 039033 \(2021\)](#)
- [14] M. Banik, **T. Guha**, M. Alimuddin, G. Kar, S. Halder and S. S. Bhattacharya, Multi-copy adaptive local discrimination: Strongest possible two-qubit nonlocal bases, [Phys. Rev. Lett. 126, 210505 \(2021\)](#)
- [15] S. S. Bhattacharya, A. G. Maity, **T. Guha**, G. Chiribella and M. Banik, Random-Receiver Quantum Communication, [PRX Quantum 2, 020350 \(2021\)](#)

- [16] **T. Guha**, M. Alimuddin, S. Rout, A. Mukherjee, S. S. Bhattacharya and M. Banik, Quantum Advantage in Shared Randomness Processing, [Quantum, 5, 569 \(2021\)](#)
- [17] S. G. Naik, E. P. Lobo, S. Sen, R. Patra, M. Alimuddin, **T. Guha**, S. S. Bhattacharya and M. Banik, On composition of multipartite quantum systems: perspective from time-like paradigm, [Phys. Rev. Lett. 128, 140401 \(2022\)](#)
- [18] S. Sen, E. P. Lobo, S. G. Naik, R. Patra, T. Gupta, S. B. Ghosh, S. Saha, M. Alimuddin, **T. Guha**, S. S. Bhattacharya and M. Banik, Local Quantum State Marking, [Phys. Rev. A. 105, 032407 \(2022\)](#)
- [19] S. B. Ghosh, T. Gupta, A. V. Ardra, A. Das Bhowmik, S. Saha, **T. Guha** and A. Mukherjee, Activating strong nonlocality from local sets: An elimination paradigm, [Phys. Rev. A. \(Letter\) 106, L010202 \(2022\)](#)
- [20] **T. Guha**, S. Roy, K. Simonov and Z. Zimboras, Activation of thermal states by quantum SWITCH-driven thermalization and its limits, [arXiv:2208.04034 \(2022\)](#)
- [21] **T. Guha**, S. Roy and G. Chiribella, Quantum networks boosted by entanglement with a control system, [arXiv:2206.05247 \(2022\)](#)
- [22] Mayalakshmi K, T. Muruganandan, S. G. Naik, **T. Guha**, M. Banik and S. Saha, Bipartite polygon models: entanglement classes and their nonlocal behaviour, [arXiv:2205.05415 \(2022\)](#)
- [23] R. K. Patra, S. G. Naik, E. P. Lobo, S. Sen, **T. Guha**, S. S. Bhattacharya, M. Alimuddin and M. Banik, Classical superdense coding and communication advantage of a single quantum, [arXiv:2202.06796 \(2022\)](#)
- [24] T. Gupta, S. B. Ghosh, Ardra A. V., A. Das Bhowmik, S. Saha, **T. Guha**, R. Rahaman and A. Mukherjee, Genuine Activation of Quantum Nonlocality: Stronger Than Local Indistinguishability, [arXiv:2202.03127 \(2022\)](#)
- [25] S. Saha, **T. Guha**, S. S. Bhattacharya and M. Banik, Distributed Computing Model: Classical vs. Quantum vs. Post-Quantum, [arXiv:2012.05781 \(2020\)](#)
- [26] **T. Guha**, M. Alimuddin, A. Mukherjee, S. S. Bhattacharya, A. Roy and A. Bhattacharya, Thermodynamics of local baths in the context of work extraction, [arXiv:1708.09818 \(2017\)](#)