

UNIVERSITY OF CALCUTTA

DEPARTMENT OF APPLIED MATHEMATICS

FACULTY ACADEMIC PROFILE/CV



1. NAME : Prof. Debasis Sarkar
2. DESIGNATION: Professor
3. DATE OF BIRTH: 18.06.1968
4. DEPARTMENT & University: Applied Mathematics, University Of Calcutta
5. RESIDENCE : Permanent.- 2, T. N. Banerjee Bye Lane, P.O.- Sukchar,
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7. ACADEMIC QUALIFICATIONS: (graduation onwards)

College/University from which the degree was obtained	Abbreviation of the degree
Presidency College, University of Calcutta	B.Sc. (Hons.) in Mathematics
University of Calcutta	M. Sc. in Applied Mathematics Special Paper: Quantum Mechanics
University of Calcutta	Ph. D.

8. SPECIALIZATION / MAJOR THRUST RESERCH AREAS:

Quantum Foundations, Quantum Information Theory

9. Chronological description of different positions held/holding right from first employment in the substantive post:

Designation	Name of Employer	Date of Joining/Leaving	
		Joining	Leaving
Lecturer in Mathematics	Barrackpore Rastraguru Surendranath College	19.06.1997	31.08.1999
Lecturer in Mathematics	Burdwan University	01.09.1999	02.01.2001
Lecturer in Applied Mathematics	University of Calcutta	03.01.2001	23.12.2002
Senior Lecturer in Applied Mathematics	University of Calcutta	24.12.2002	18.06.2006
Reader in Applied Mathematics	University of Calcutta	19.06.2006	18.06.2009
Associate Professor in Applied Mathematics	University of Calcutta	19.06.2009	18.06.2012
Professor in Applied Mathematics (served as the Head of the department of Applied Mathematics, CU, from 01.09.2018-30.09.2020)	University of Calcutta	19.06.2012	Till date

10. ON-GOING Ph.D. SUPERVISION :

SL	NAME	M/F	SPECIALIZATION	TOPIC	STATUS / REMARKS **
1.	Sumana Karmakar	F	Quantum Mechanics	On Some Aspects of Multipartite Quantum Correlations	Ph. D. registration done on the year 2013. Full time UGC Research Fellow from January 2012 at Dept. of Applied Mathematics, CU. Thesis submitted in the year 2018. Viva Voce done
2.	Nabendu Das	M	Quantum Mechanics	A study on some aspects of quantum correlation	Joined as DST-INSPIRE Fellow in the year 2016. Now part-time Ph.D. student as joined in a service.
3.	Mostak Kamal Molla	M	Quantum Mechanics	Nonlocal aspects of quantum theory	Joined as UGC Fellow in the year 2016. SRF from 2018.
4.	Amit Kundu	M	Quantum Mechanics	Understanding Quantum Correlations:- Some Perspectives	Joined as CSIR Fellow in the year 2017. SRF from 2019.
5.	Prabir Kr. Dey	M	Quantum Mechanics	Study on entanglement and different quantumness aspects	Joined as UGC Fellow in the year 2017. SRF from 2019.
6.	Priyabrata Char	M	Quantum Mechanics	A Study on Quantum Entanglement and Coherence	Joined as DST-INSPIRE Fellow in the year 2017. SRF from 2019.

11. LIST OF Ph.D. / M.Phil. AWRDEES:

SL	NAME	M/F	SPECIALIZATION in PG level	TOPIC	STATUS / REMARKS **
1.	Indrani Chattopadhyay	F	Quantum Mechanics	Entanglement-A Queer In The World Of Quantum: Some Perspectives	Ph. D.(Sc.) degree Awarded in The year 2008
2.	Subhadipa Das	F	Quantum Mechanics	Quantum Mechanics as a non-local theory- a discussion	M.Phil degree awarded in the year 2009
3.	Amit Bhar	M	Quantum Mechanics	Behaviour of Quantum Entanglement through Incomparability	Ph. D.(Sc.) degree Awarded in The year 2015
4.	Ajoy Sen	M	Quantum Mechanics	On Some Aspects of General Quantum Correlation	Ph. D.(Sc.) degree Awarded in the year 2016.
5.	Biswajit Paul	M	Solid Mechanics	Quantum Correlations, Bell Inequalities- Some Perspectives	Ph. D.(Sc.) degree Awarded in the year 2019.
6.	Kaushiki Mukherjee	F	Quantum Mechanics	On Some Foundational Aspects of Quantum Theory	Ph. D.(Sc.) degree Awarded in the year 2019.

12. LIST OF PUBLICATIONS(Complete list)

Research papers published:

- Title: Detection of Genuine Tripartite Entanglement in Quantum Network Scenario
Authors: Biswajit Paul, Kaushiki Mukherjee, Sumana Karmakar, Debasis Sarkar, Amit Mukherjee, Arup Roy, Some Sankar Bhattacharya
Journal: Quantum Information Processing , Published 17 July 2020, Volume 19 Article number: 246 (2020), <https://doi.org/10.1007/s11128-020-0270-1>, Impact factor: 2.222
- Title: Persistency of Genuine Correlations Under Particle Loss
Authors: Biswajit Paul, Kaushiki Mukherjee, Ajoy Sen, Debasis Sarkar, Amit Mukherjee, Arup Roy, Some Sankar Bhattacharya (accepted pra 2020)
- Title: Revealing Genuine Steering under Sequential Measurement Scenario
Authors: Amit Mukherjee, Arup Roy, Some Sankar Bhattacharya, Biswajit Paul, Kaushiki Mukherjee, Debasis Sarkar
Journal: Quantum Information Processing , Published 17 March 2020, Volume 19 Article number: 143 (2020), <https://doi.org/10.1007/s11128-020-02633-5>, Impact factor: 2.222
- Title: Necessary and Sufficient Condition for the Equivalence of Two Pure Multipartite States under Stochastic Local Incoherent Operations and Classical Communications,
With: Dipayan Chakraborty, Prabir Kumar Dey, Nabendu Das, Indrani Chattopadhyay and Amit Bhar
Journal: Physical Review A, 100, 052316 – Published 13 November 2019, Impact factor: 2.925
- Title: Superunsteerability as a quantifiable resource for random access codes assisted by Bell-diagonal states,
With: C. Jebaratnam, Debarshi Das, Som Kanjilal, R. Srikanth, Indrani Chattopadhyay and A.S. Majumdar
Journal: Physical Review A, (accepted 2019), Impact factor: 2.925
- Title: Detecting Two Qubit Both-Way Positive Discord States,
With: Kaushiki Mukherjee, Sumana Karmakar and Biswajit Paul
Journal: The European Physical Journal D (accepted 2019), Impact Factor: 1.393
- Title: Coherence Fraction,
With: Sumana Karmakar, Ajoy Sen, Indrani Chattopadhyay and Amit Bhar
Journal: Quantum Information Processing , (accepted 2019), Impact factor: 2.192
- Title: Restricted distribution of quantum correlations in bilocal network,

With: Kaushiki Mukherjee and Biswajit Paul.

Journal: Quantum Information Processing , (accepted 2019), Impact factor: 2.192

9. Title: Sharing of tripartite nonlocality by multiple observers measuring sequentially at one side,
With: Sutapa Saha, Debarshi Das, Souradeep Sasmal, Kaushiki Mukherjee, Arup Roy and Some Sankar Bhattacharya.
Journal: Quantum Information Processing , (accepted 2018), Impact factor: 2.192
10. Title: Tripartite-entanglement detection through tripartite quantum steering in one-sided and two-sided device-independent scenarios,
With: C. Jebaratnam, Debarshi Das, Arup Roy, Amit Mukherjee, Some Sankar Bhattacharya, Bihalan Bhattacharya and Alberto Riccardi.
Journal : Physical Review A, **98**, 022101 (2018), Impact factor: 2.925
11. Title: Performance of quantum cloning and deleting machines over coherence,
With: Sumana Karmakar and Ajoy Sen.
Journal: Quantum Information Processing , (2017) **16**: 251. <https://doi.org/10.1007/s11128-017-1691-y>,
Impact factor: 2.192
12. Title: Conditional steering under the von Neumann scenario ,
With: Kaushiki Mukherjee, Biswajit Paul, Sumana Karmakar, Amit Mukherjee, Some Sankar Bhattacharya and Arup Roy.
Journal : Physical Review A, **96**, 022122 (2017), Impact factor: 2.925
13. Title: Nontrilocality: Exploiting nonlocality from three-particle systems
With: Kaushiki Mukherjee, Biswajit Paul.
Journal : Physical Review A, **96**, 022103 (2017). DOI:<https://doi.org/10.1103/PhysRevA.96.022103>, Impact factor: 2.925
14. Title: Revealing Hidden Genuine Tripartite Nonlocality
With: Biswajit Paul, Kaushiki Mukherjee.
Journal : Physical Review A, **94**, 052101 (2016). DOI:<https://doi.org/10.1103/PhysRevA.94.052101>, Impact factor: 2.765
15. Title: Nonlocality of three-qubit Greenberger-Horne-Zeilinger-symmetric states
With: Biswajit Paul, Kaushiki Mukherjee.
Journal : Physical Review A, **94**, 032101(2016). <https://doi.org/10.1103/PhysRevA.94.032101>, Impact factor: 2.765
16. Title: On Measures of quantum entanglement- a brief review
Journal : International Journal of Quantum Information. Vol. 14, No. 3 (2016) 1640024, doi: 10.1142/S0219749916400244
Impact factor 1.10
17. Title: Distinguishing quantum operations: LOCC versus separable operators
With : Indrani Chattopadhyay
Journal : International Journal of Quantum Information. Vol. 14, No. 3 (2016) 1640028, doi: 10.1142/S0219749916400281
Impact factor 1.10
18. Title: Revealing Advantage in a Quantum Network
With : Kaushiki Mukherjee and Biswajit Paul
Journal : Quantum Information Processing , Volume 15, Issue 7, pp 2895–2921 (2016); DOI: 10.1007/s11128-016-1301-4
Impact factor 1.923
19. Title: On Strong Monogamy Conjecture in Four-Qubit System
With: Sumana Karmakar, Ajoy Sen and Amit Bhar
Journal: Physical Review A, **93**, 012327 – Published 15 January 2016.
Impact factor: 2.808

20. Title: Local Quantum Uncertainty in Two-Qubit Separable States: A Case Study
 With : Ajoy Sen and Amit Bhar
 Journal : Quantum Information Processing , January 2016, Volume 15, [Issue 1](#), pp 233-243; doi: 10.1007/s11128-015-1114-x
 Impact factor 1.923
21. Title: Efficient Test to Demonstrate Genuine Three Particle Nonlocality
 With : Kaushiki Mukherjee and Biswajit Paul
 Journal : Journal of Physics A: Math. & Theor., **48** 465302 doi:10.1088/1751-8113/48/46/465302 (2015).
 Impact factor 1.583
22. Title: Effect of local filtering on freezing phenomena of quantum correlation
 With : Sumana Karmakar, Ajoy Sen and Amit Bhar
 Journal : Quantum Information Processing , Volume 14, Issue 7, pp 2517-2533 (2015); doi: 10.1007/s11128-015-1008-y.
 Impact factor 2.960
23. Title: Correlations In n-local Scenario
 With : Kaushiki Mukherjee and Biswajit Paul
 Journal : Quantum Information Processing, Volume 14, Issue 6, pp 2025-2042 (2015); doi: 10.1007/s11128-015-0971-7.
 Impact factor 2.960
24. Title: Local Quantum Uncertainty and Bounds on Quantumness for Orthogonally invariant class of states
 With : Ajoy Sen and Amit Bhar
 Journal : Quantum Information Processing, (January 2015), Volume 14, Issue 1, pp 269-285 (online OCT. 2014)doi: 10.1007/s11128-014-0850-7.
 Impact factor 2.960
25. Title: One sided indeterminism alone is not a useful resource to simulate any nonlocal correlation
 With: Biswajit Paul, Kaushiki Mukherjee.
 Journal : Quantum Information Processing, Volume 13, Issue 8, pp 1687-1699(2014).
 Impact factor 2.960
26. Title: Electrically Controlled Eight-Spin-Qubit Entangled-State Generation in a Molecular Break Junction
 With: M. Chattopadhyay, Md M. Alam and S. Chakrabarti.
 Journal : ChemPhysChem, Vol 15, Issue 9, pages 1747–1751, (2014).
 Impact factor 3.360
27. Title: Simulating GHZ Correlations Relaxing Physical Constraints
 With: Biswajit Paul, Kaushiki Mukherjee.
 Journal : Physical Review A, **88**, 014104 (2013). Impact factor: 2.991
28. Title : Decoherence Dynamics of Measurement-Induced Nonlocality and comparison with Geometric Discord
 With : Ajoy Sen and Amit Bhar
 Journal : Quantum Information Processing, Vol. 12 Issue 9, pp 3007-3022 (2013), doi: 10.1007/s11128-013-0579-8
29. Title : Character of superposed states under deterministic LOCC
 With : Amit Bhar and Ajoy Sen
 Journal: Quantum Information Processing, Volume 12, Issue 2, pp 721-732 (2013), DOI: 10.1007/s11128-012-0412-9.
 Impact factor of the journal:- 2.000
30. Title : Monogamy of Measurement-Induced NonLocality
 With : Ajoy Sen and Amit Bhar
 Journal:Journal of Physics A: Math. & Theor., **45** (2012) 405306 (9pp) (2012), DOI :10.1088/1751-8113/45/40/405306. Impact factor of the journal:- 1.564
31. Title : A comparative study on correlation measures of pure bipartite states through incomparability
 With : Amit Bhar and I. Chattopadhyay
 Journal : Journal of Quantum Information Science, (2012), Vol. 2, 90-101, doi:10.4236/jqis.2012.23015
32. Title : Fuzzy graph representation of a fuzzy concept lattice
 With : Partha Ghosh and Krishna Kundu
 Journal: Fuzzy Sets and Systems - FSS, vol. 161, no. 12, pp. 1669-1675, (2010).

Impact factor of the journal:- 2.138

33. Title : Entanglement of formation is non-monotonic with concurrence: a simple proof
With : I. Chattopadhyay
Journal : Quantum Information Processing, Vol. 7, No. 6, (2008), 243-249.
Impact factor of the journal:- 2.641
34. Title : Character of locally inequivalent classes of states and entropy of entanglement
With : I. Chattopadhyay
Journal : Physics Review A, Rapid Communications, 77, (2008) 050305(R).
Impact factor of the journal:- 3.322
35. Title : Local Indistinguishability and Possibility of Hiding cbits in Activable Bound Entangled States
With : I. Chattopadhyay
Journal : Physics Letters A, 365, (2007) 273-277.
Impact factor of the journal:- 1.995
36. Title : General Classes of Impossible Operations through the Existence of Incomparable states
With : I. Chattopadhyay
Journal : Quantum Information and Computation, Vol. 7, No. 4, (2007) 392-400.
Impact factor of the journal:- 3.584
37. Title : No-Cloning and No-Deleting Theorems through the Existence of Incomparable States Under LOCC
With : A. Bhar and I. Chattopadhyay
Journal : Quantum Information Processing, Vol. 6, No. 2, (2007), 93-99.
38. Title : Impossibility of exact flipping of three arbitrary quantum states via incomparability
With : I. Chattopadhyay
Journal : Physical Review A, 73, (2006) 044303.
39. Title : No-Flipping as a consequence of No-Signalling and Non-increase of Entanglement under LOCC
With : I. Chattopadhyay, S. K. Choudhary, G. Kar and S. Kunkri
Journal : Physics Letters A, 351, (2006) 384-387.
40. Title : Deterministic Local Conversion of Incomparable States by Collective LOCC
With : I. Chattopadhyay
Journal : Quantum Information and Computation, Vol. 5, No. 3, (2005) 247-257.
41. Title : Bell-correlated activable bound entanglement in multiqubit systems
With : S. Bandyopadhyay, I. Chattopadhyay, V. Roychowdhury
Journal : Physical Review A, 71, 062317 (2005).
42. Title : Optimal asymmetric cloning machine on a great circle using no-signaling condition
With : S. Kunkri, Md.Manirul Ali and Geetu Narang
Journal : J. Cal. Math. Soc. 1, No.3-4, 121-128 (2005).
43. Title : Distinguishability of maximally entangled states
With : S. Ghosh, G. Kar and A.Roy
Journal : Physical Review A, 70, 022304 (2004).
44. Title : Entanglement teleportation via Bell mixtures
With : S. Ghosh, G. Kar, A.Roy and U. Sen
Journal : Physical Review A, 66, 014304 (2002).
45. Title : Local indistinguishability of orthogonal pure states by using a bound on distillable entanglement
With : S. Ghosh, G. Kar, A.Roy, A. Sen(De), and U. Sen
Journal : Physical Review A, 65, 062307 (2002).
46. Title : Fuzzy topological convergence for sequences in bounded posets and related structures
Journal : The Journal of Fuzzy Mathematics, 10, 587 (2002).
47. Title : Entanglement teleportation through GHZ-class states
With : S. Ghosh, G. Kar, A.Roy, and U. Sen
Journal : New Journal of Physics, 4, 48.1 (2002).
48. Title : Realization of optimal disentanglement by teleportation via separable channels
With : G. Kar, A. Roy, S. Ghosh and U. Sen
Journal : Physical Review A, 64, 042114 (2001).
49. Title : Optimal universal disentangling machine for two qubit quantum states
With : S. Bandyopadhyay, A. Roy, S. Ghosh and G. Kar
Journal : Physical Review A, 61, 52301 (2000).
50. Title : Hardy's nonlocality for entangled states of three spin-1/2 particles
With : G. Kar and S. Ghosh

Journal : Physics Letters A, 243, 249 (1998).

51. Title : On fuzzy local functions, fuzzy semiregularizations and fuzzy mappings

Journal : The Journal of Fuzzy Mathematics, 6, 735 (1998).

52. Title : Fuzzy ideal theory: fuzzy local function and generated fuzzy topology

Journal : Fuzzy Sets and Systems, 87, 117 (1997).

Other Publications:

1. "Quantum Entanglement- Fundamental Aspects", Proceedings of the Third Workshop on Techniques in Applied Mathematics, Narosa Publ. House, New Delhi, 284-291, (2008).

2. Numerical Analysis, Self learning study material for NetajiSubhas Open University.

13. Projects / Consultancies:

Title	Agency	Period	Grant/Amount Mobilized (Rs. Lakh)
Fundamental aspects of Quantum Theory and Quantum Information Science	SERB, DST	3 yrs	Rs. 45 lakhs. This is now completed and was a joint project with SNBosecentre, ISI and Bose Inst, approved by DST, 14.11.13, PI-Dr. A.S. Majumder of SNBose Centre
Non-Classical Correlations-Entanglement and Beyond Entanglement	DST	3yrs	Total-Rs. 103.98 budget approved, initial sanctioned recurring amount received. It is a dedicated Got. Of India initiative on QuEST. PI- Prof. Debasis Sarkar, Co-PI- Dr. Indrani Chattopadhyay
Technology-aware modelling and implementation of single, two and multi qubit quantum operations for Quantum nanostructures including Quantum Dots (QDs) and Nanowires (NWs)	DST	3yrs	Total~Rs. 1000. budget approved, initial sanctioned recurring amount received. It is a dedicated Got. Of India initiative on QuEST. PI- Dr. S. Chattopadhyay, Co-PI's- Prof. D. Sarkar, Prof. A. Chakrabarti, Dr. A. Bhattacharyya, Dr. K. Das Sharma, Dr. I. Chattopadhyay

14. Extra-Mural Fund, etc:

Co-ordinator- UGC DSA SAP Phase III period- 2014-2019 of the departmental project. Total received

Sanctioned amount :- Rs. 44 lakhs (appx.)

15. PARTICIPATION IN CONFERENCE / SEMINAR / SYMPOSIUM / WORKSHOP DURING THE YEAR(Recent Years)

SL	ORGANIZED BY	NATIONAL / INTERNATIONAL	TITLE / THEME	ACTIVITY/ROLE**	DATE	PLACE
1.	IISER, Thiruvananthapuram	National	National Mission on Quantum Technologies and Applications (NM-QTA 2019)	Participated	November 5, 6, 2019	Thiruvananthapuram
2.	Institute Henri Poincare, France	International	Analysis in quantum information theory	Participated the workshop for one months	Sept. 10- Oct. 8, 2017	Institute Henri Poincare, Paris, France

3.	Centro de Ciencias de Benasque Pedro Pascual	International	Workshop on Multipartite Entanglement	Participated in the and presented a poster on "Strong monogamy conjecture of four qubits systems"	May 22 - 27, 2016	Benasque, Spain
4.	E. Majorana Centre for Scientific Culture, Erice, Italy,	International	Conference on Noise, Information and Complexity @ Quantum Scale	"Local Quantum Uncertainty and Bounds on Quantumness for OxOinvariant class of states"(accepted poster)	October 6th - 12th, 2013	Erice, Italy,
5.	Institute of Mathematical Sciences, Chennai.	International	13th Asian Quantum Information Science Conference, (AQIS'13)	Participated and presented poster on "Bell inequalities under one sided relaxation of physical constraints"	August 25-31, 2013	Chennai.
6.	Institute of Mathematical Sciences, Chennai.	International	13th Asian Quantum Information Science Conference, (AQIS'13)	Participated and presented poster on "Local Quantum Uncertainty and Bounds on Quantumness for OxO invariant class of states"	August 25-31, 2013	Chennai.
7.	Soochow University, Suzhou, China	International	12th Asian Quantum Information Science Conference, (AQIS'12)	Participated and presented a paper entitled "Decoherence Dynamics of Measurement-Induced Nonlocality and comparison with Geometric Discord"	August 23-26, 2012	Suzhou, China
8.	The Institute of Mathematical Sciences, Chennai	International	Functional Analysis of Quantum Information Theory	Participant	December 26, 2011 - January 6, 2012	Chennai
9.	S. N. Bose National Centre for Basic Sciences	Silver Jubilee International Symposium	75 Years of Quantum Entanglement: Foundations and Information theoretic applications	Participant	January 6 th to 10th, 2011	Kolkata
10.	University of Hyderabad and International Committee for Mathematicians	International	International Congress of Mathematicians (ICM-2010)	Participant	19-27 August, 2010	Hyderabad
11.	Institute of Physics, Bhubaneswar, Orissa	International	INTERNATIONAL PROGRAM ON QUANTUM INFORMATION (IPQI-2010)	Participant, Chaired different sessions, two invited talk given and one tutorial class taken	January 4-30, 2010	Bhubaneswar, Orissa
12.	Dept. Of Physics, University of Calcutta	National	LHC and New Frontiers of Particle Physics	Participant	December 7-9, 2009	Kolkata
13.	The Institute of Mathematical Sciences, Chennai	International	International Workshop on "Entanglement in Quantum Condensed Matter Systems" and Annual K.S. Krishnan Meeting	Participant and one invited talk given	November 17-29, and December 1 and 2, 2008	Chennai

14.	Institute of Physics, Bhubaneswar	International	International School and Conference on Quantum Information (ISCQI-2008)	Participant, Chaired a session, one invited talk given and two tutorial classes taken	March 4-12, 2008	Bhubaneswar, Orissa
15.	Raman Centre for Atomic, Molecular and Optical Sciences, Indian Association for the Cultivation of Science	National	One-Day Workshop on Quantum Information	Participant	3 rd June, 2008	Jadavpur, Kolkata
16.	TIFR, Mumbai and IIT, Delhi	International	11th workshop on Quantum Information Processing (QIP-2008)	Participated and presented a poster entitled "Incomparability of Pure Bipartite states as non-locality beyond Entropy of Entanglement"	17 th to 21 th December 2007	India International Center, Delhi
17.	Physical Research Laboratory (PRL), Ahmedabad	International	SERC School on Quantum Information and Quantum Optics	Participant	1 st to 14 th February, 2004	Ahmedabad

16. INVITED LECTURES (Recent Years)

(a) National :

1. Online invited lecture given on "An Introduction to Quantum Information and Computation", in the state level Webinar at the Dept. of Mathematics, Raja Peary Mohan College, Hooghly on 18th August, 2020.
2. Online invited lecture given on "On Quantum Entanglement", in the national level Online Symposium on Quantum information and Computation (QUANTUM TALKS), organized by IIT Hyderabad, during June 29 to July 3, 2020, on 29.06.2020.
3. Invited talk given on "Quantum Coherence a new resource", and Chaired a session in the national level conference titled "Quantum Information and Computation-2019", QIC-2019, at IIT Jodhpur, from December 8-11, 2019.
4. Invited lecture given on "Quantum Information and Computation - An Introduction", at the Dept. of Mathematics, Bijoy Krishna Girls' College, Howrah to deliver extension lecture on 20th November, 2019.
5. Invited as an expert in the Panel Discussion: Quantum Computing- Way Ahead in the Quantum Computing Knowledge Workshop on 12.10.18 organized by Dept. of IT&E, Govt. of West Bengal.
6. Invited talk given at The Mathematics Department of St. Xavier's College, Kolkata in the programme Analytica 2018 on 20th September, 2018.
7. Invited talk given on "Quantum Information Theory - An Introduction", in National Seminar and Terminology Workshop on "Bhartiya Bhashaon Mein Shabdawali: Kal, Aaj aur Kal" during July 3-5, 2017, at Jamia Millia Islamia University, New Delhi.
8. Three invited talk given on "Classical Mechanics" in Teachers Enrichment workshop in Mathematics, during June 15-29, 2017 organized by Calcutta Mathematical Society, Salt Lake, Kolkata.
9. Invited talk given on Mechanics in TWO DAYS NATIONAL SEMINAR-CUM-WORKSHOP ON "Recent Advances in Mathematics and Mathematical Sciences: Its Teaching and Learning" during 22nd and 23th February, 2017, organized by Dept. of Mathematics, Muragachha Govt. College in collaboration with Calcutta Mathematical Society, at Muragachha, Nadia, West Bengal.
10. Invited talk entitled "Quantum Correlations-Entanglement and beyond Entanglement" given in National Conference on Advances in Interdisciplinary Science-2017 during 27th – 28th January, 2017, at Bhairab Ganguly College, Belghoria, Kolkata and Chaired a session.
11. Invited talk entitled "Correlations – entanglement and beyond entanglement" in Discussion Meeting on Quantum Mechanics, on December 7, 2015 at S.N. Bose National Centre for Basic Sciences, Salt lake, Kolkata.
12. Two invited lectures given at Summer School on Quantum correlation; Foundation, Information Processing and Various Applications, organized by PAMU at ISI from 22nd June to 3rd July, 2015 on "Entanglement and other Quantum Correlations".

13. Invited talk given at ISI Kolkata, in a National level seminar on Quantum Correlations: Foundation and Applications, during March 4-5, 2014, on "Entanglement- a new resource".
14. Invited talk given at the Calcutta Mathematical Society, Kolkata, in a National seminar to commemorate the sesquicentennial birth anniversary of Sir Asutosh Mookerjee, during September 6-8, 2013 on "On some impossible operations in quantum mechanics".
15. Invited talk given at Department of Mathematics, Jogesh Chandra Chaudhuri College, Kolkata, in a UGC National Seminar on Quantum Information Theory and Computer Science, during February 14-15, 2012 on "Entanglement- a new resource" and chaired a session.
16. Invited talk given at Department of Mathematics, VisvaBharati University in a National Seminar on Analysis of Nonlinear Systems (ANS-2011), during March 26-27, 2011 on "On Some Impossible Operations in Quantum Mechanics".
17. Invited lecture given in NCMA -2011, a national level conference organized by Dept. of Mathematics, Jadavpur University, Kolkata, during 13-14 January, 2011, on "Quantum Information Theory - An Introduction".
18. Invited talk given at the Department of Mathematics, Burdwan University on "*On Some Impossible Operations in Quantum Mechanics*" in the National Seminar on Emerging Areas in Mathematics and Applications (NSEAMA-2009), during February 18-20, 2009.
19. Delivered an invited talk at Central Mechanical Engineering Research Institute, Durgapur, during January 7, 2008 on Quantum Information Theory- Introductory concepts, to motivate young students.
20. Delivered an invited talk in Professor Shuddhodhan Ghosh Memorial Lecture on "*Quantum Information Theory: An Introduction*" in the symposium on Recent Trends in Theoretical Physics and Applied Mathematics, held at the Institute of Theoretical Physics, Kolkata, on the occasion of Fifty Fifth Anniversary of the institute on 29th September, 2007.
21. Invited talk given at Department of Mathematics, Vidyasagar University in a National level seminar on Emerging Trends in Computational and Applied Mathematics during January 31 - February 1, 2007, on "*An Introduction to Quantum Information Theory*".
22. Delivered two invited lectures on Quantum entanglement, at Third Workshop on Techniques in Applied Mathematics, during October 10-18, 2006, held at Department of Applied mathematics, University of Calcutta.
23. Invited talk given at Department of Mathematics, VisvaBharati University in a National Seminar on Current development and applications of mathematics (trends and perspectives) during March 12-14, 2005 on "*Quantum entanglement- a peculiar resource*".
24. Invited talk given several times (during the years 2003 and 2004) at S.N. Bose National Centre for Basic Sciences on different aspects of quantum entanglement.
25. Invited talk given on "*Quantum Cloning and teleportation*" in a National Seminar on recent trends in mathematics and its applications during April 28-29, 2003 at the Department of Mathematics, University of Tripura.

(b) International:

1. One online invited lecture given as Keynote Speaker on "Entanglement- A New Resource" in International Conference on Recent Trends in Applied Mathematical Sciences (ICRTAMS-2020), organized by Arunai International Research Foundation, Tiruvannamalai, Tamilnadu, India, during 26th to 27th September 2020 (Virtual Conference), on 27.09.2020.
2. One invited lecture given on "Quantum Correlations in Quantum Network Scenario" in International Conference on Quantum Frontiers & Fundamentals: Experimental Studies and Theoretical Ramifications (QFF 2020), organized by RRI, Bangalore, India, during 13 - 18 Jan, 2020, on 16.01.2020.
3. Two invited lectures given on "Entanglement- Characterization and Quantification- an introduction", in The Summer School on Quantum Information and Quantum Technology 2019 (QIQT 2019), organized by IISER, Kolkata during June 13 to July 21, 2019, on 18.06.19.
4. Invited lecture given on "Classification of three qubit states under local incoherent operations", in Quantum Information Processing and Applications (QIPA-2018) held during 02 - 08 December, 2018 at Harish-Chandra Research Institute (HRI), Allahabad, India.
5. Invited lecture given on "Quantum Correlations in different scenario", in the International Conference in Mathematical Analysis (ICMA 2018), organized by Department of Mathematics, Burdwan University during February 15th to 17th, 2018.

6. Invited Lecture given on "Correlations in multipartite scenario", in the International Conference on Mathematical Analysis and Application in Modelling during 9th January to 12th January, 2018, organized by Dept. of Mathematics, Jadavpur University, Kolkata.
7. Participated and presented Invited lecture entitled "Correlations in multipartite scenario" in the 3rd International Conference on Quantum Foundations 2017 (ICQF-17), during December 4 to December 9, 2017, organized by the Department of Physics, NIT Patna, Patna.
8. Invited lecture entitled "Quantum Correlations-Entanglement and beyond Entanglement" given in International programme in Quantum Optics & Quantum Technology (QOQT_2017) during June 5-8, 2017 organized by Indian Association for the Cultivation of Science, Jadavpur, Kolkata.
9. Participated and presented Invited lecture entitled "Nonlocality in three qubit systems" in the 2nd International Conference on Quantum Foundations 2016 (ICQF-16), during October 17 to October 21, 2016, organized by the Department of Physics, NIT Patna, Patna.
10. Participated and presented two invited School talks on "Quantum Correlations" and one Invited Conference Talk entitled "No-go conversion witness for two-qudit systems" in International School and Conference on Quantum Information (ISCQI 2016), during February 09-18, 2016, at Institute of Physics, Bhubaneswar, Orissa.
11. Participated and presented Invited lecture entitled "Conversion witness for OxO invariant states" in International meeting on Quantum Information Processing and Applications (QIPA-2015), during 07 - 13 December, 2015 at Harish-Chandra Research Institute (HRI), Allahabad.
12. Participated and presented Invited lecture entitled "Correlations in a network- a brief review" in International Conference on Quantum Foundations 2015 (ICQF15), during November 30 to December 04, 2015, organized by the Department of Physics, NIT Patna, Patna.
13. Participated and presented Invited lecture entitled "n-local Correlations" in International Conference on Recent Trends in Mathematics (ICRTM2015), during July 10 to 12, 2015, organized by the Department of Mathematics, University of Allahabad, Allahabad.
14. Participated and presented Invited Talk entitled "*Quantum Correlations*" in International Conference on Dynamical systems and Mathematical Biology (ICDSMB 2014), during November 17-19, 2014 at Department of Mathematics, Jadavpur University, Kolkata.
15. Participated and presented Invited Talk entitled "Measures of quantum entanglement" in International Program on Quantum Information (IPQI 2014), during February 17-28, 2014, at Institute of Physics, Bhubaneswar, Orissa.
16. Participated and presented Invited Talk entitled "Correlations in Trilocal Scenario" in International meet on Quantum Correlations and Logic, Language and Set Theory, during December 9-14, 2013, at IIT Jodhpur, Rajasthan.
17. Participated and presented Invited Talk entitled "Local Quantum Uncertainty and Bounds on Quantumness for OxO invariant class of states" in International level Meeting on Quantum Information Processing and Applications (QIPA-2013), during December 2-8, 2013 at Harish-Chandra Research Institute(HRI), Allahabad.
18. Participated and presented Invited Talk entitled "Non-classical Correlations-a Short Review and Some Results" in International level Satellite meeting on "Quantum Correlation and its possible application in communication and cryptography, during September 2-3, 2013 at Physics and Applied Mathematics Unit & CoEC, ISI, Kolkata.
19. Participated and presented Invited Talk entitled "Transformation of entangled states" in International level Workshop on Information and Security in Quantum World, during March 28-30, 2012 at Centre of Excellence in Cryptology, Indian Statistical Institute, Kolkata.
20. Participated and presented Invited Talk entitled "Non-classical correlations" in International level Discussion Meeting on Quantum Mechanics, on March 7, 2012 at S.N. Bose National Centre for Basic Sciences, Saltlake, Kolkata.
21. Participated and presented Invited Talk entitled "On Monogamy of Measurement Induced Non-Locality" in International Workshop on Quantum Information (IWQI-2012), during February 20-26, 2012 at Harish-Chandra Research Institute (HRI), Allahabad.
22. Participated and presented Invited Talk entitled "Transformation of entangled states", in Workshop on Information and Security in Quantum World, held at Centre of Excellence in Cryptology, Indian Statistical Institute, Kolkata, during March 28-30, 2012.

23. Participated and presented Invited Talk entitled "*Non-classical correlations*", in International level Discussion Meeting on Quantum Mechanics, held at S.N. Bose National Centre for Basic Sciences, Saltlake, Kolkata, on March 7, 2012.
24. Participated and presented Invited Talk entitled "*On Monogamy of Measurement Induced Non-Locality*", in International Workshop on Quantum Information (IWQI-2012), held at the Harish-Chandra Research Institute (HRI), Allahabad, India, during February 20-26, 2012.
25. Participated and presented Invited Talk entitled "On Measures Of Multipartite Correlations", in 'INTERNATIONAL SCHOOL and CONFERENCE ON QUANTUM INFORMATION 2011(ISCQI-2011)', held at the Institute of Physics, Bhubaneswar, Orissa, during December 13-22, 2011.
26. Member of the advisory committee, participated and invited talk given in the International Conference on Quantum Optics and Quantum Computing, (ICQOQC-11) from 24th March, 2011 to 26th March, 2011 at IIT, Noida, India, on "On Multipartite Entanglement".
27. Participated and presented two Invited Talk entitled "*Impossible Operations in the Quantum World-I & II*" and taken tutorial class on "*Quantum Entanglement*", in 'INTERNATIONAL PROGRAM ON QUANTUM INFORMATION (IPQI-2010)', held at the Institute of Physics, Bhubaneswar, Orissa, during January 4-30, 2010.
28. Invited talk given at S.N. Bose National Centre for Basic Sciences, Saltlake, Kolkata, on "*Local Conversion of Bipartite Pure Entangled States*", in the International conference 'India-Singapore Joint Physics Symposium 2009', during January 6-8, 2009.
29. Invited talk given at The Institute of Mathematical Sciences, Chennai on "*Local Conversion of Pure Entangled States*", in the International Workshop on "Entanglement in Quantum Condensed Matter Systems", during November 17-29, 2008 and also participated in two-day long Annual K.S. Krishnan Meeting on December 1 and 2, 2008.
30. Participated, taken tutorial class on "*Quantum Entanglement- Fundamental Aspects*", and presented an Invited Talk entitled "*On Local Distinguishability and Indistinguishability of Orthogonal Composite States*", in 'International School and Conference on Quantum Information (ISCQI-2008)', held at the Institute of Physics, Bhubaneswar, Orissa, during March 4-12, 2008.
31. Invited talk given at the Department of Mathematics, Burdwan University on "*Quantum Information Theory*" in the International Conference on Frontiers of Mathematics and Applications (ICFMA-2008), during January 16-18, 2008.
32. Invited talk given on "*No-Go Principles, LOCC and Entanglement*" in International Conference on Recent Developments in Theoretical Physics (THEOPHYS'07'), held at the Indian Statistical Institute, Kolkata, during December 4-7, 2007.

17. VISITING ASSIGNMENTS (not included in the above)(Recent Years)

1. Visited Quantum Information Group at Universitat de Barcelona, Spain, during May 28 to June 3, 2016 and presented an invited talk on "Conversion witness for dxd orthogonal invariant states".
2. Visited Harish-Chandra Research Institute (HRI), Allahabad, during 29th October to 5th November, 2016 for collaborative works with Quantum Information and Computation Group and a Colloquium lecture given on "Non-Classical Correlations- Entanglement and beyond Entanglement".
3. Visited Department of Physics, University of Pune, Pune during April 27th to May 3rd, 2009 and invited lecture given on "*On Some Impossible Operations in Quantum Mechanics*".
4. Visited Institute of Physics, Bhubaneswar during March 13th-19th, 2006 and invited lecture given on "*No-Go Principles, LOCC and Entanglement*".
5. Invited guest lecturer in Mathematics at the Department of Mathematics, University of Tripura from April 25- May 9, 2003.
6. Visited The Institute of Mathematical Sciences, Chennai from January 5-25, 2003 and gave several lectures on Quantum entanglement.
7. Invited guest lecturer in Mathematics at the Department of Mathematics, University of Tripura during July-August, 2002 for 10 days.

18. COLLABORATIONS (Recent years)

(a) National : Dr. Sibashish Ghosh, IMSC, Chennai, Dr. Guruprasad Kar, ISI, Kolkata, Prof. Ujjwal Sen and Prof. Aditi Sen De, HRI, Allahabad, Prof. Archan S. Majumder, SN Bose Center, Salt Lake.

(b) International : Dr. Somshubro Bandyopadhyay, Centre for Quantum Information and Quantum Control and Department of Chemistry, University of Toronto, Toronto, Canada and Dr. Vwani Roychowdhury, Department of Electrical Engineering, UCLA, Los Angeles, California, USA. Prof. Andreas Winter, Quantum Information Group at Universitat de Barcelona, Spain.

19. PARTICIPATED IN ORGANISING AND/OR DELIVERED LECTURE IN REFRESHER COURSE/ ORIENTATION PROGRAMME:

1. One online invited lecture given in Refresher Course in Emerging Trends in Science and Technology, held at the UGC – Human Resource Development Centre, The University of Burdwan, during September 08-21, 2020 on the topic Introduction to Entanglement- A new resource in the date 12.09.2020.
2. Two invited lecture given in Refresher Course in Recent Advancements in Physical, Chemical and Mathematical Sciences, held at the UGC – Human Resource Development Centre, The University of Burdwan, during February 12- 25, 2020 on the topic Introduction to Quantum Information and Computation in the date 13.02.2020.
3. Two invited lecture given in Refresher Course on Algebra, Analysis and their Applications, held in the Dept. of Mathematics, Jadavpur University, during November 18-30, 2019 on the topic Hahn-Banach Type Theorems on vector spaces in the date 23.11.2019.
4. An online lecture is given in 2018 under SWAYAM in the topic Quantum information and computation jointly organized by Dept. of Statistics, Dept. of Applied mathematics and Dept. of Pure Mathematics, University of Calcutta.
5. Two invited lectures given in 1st Refresher Course in Mathematical Science & Computing held at the HRDC, Golapbag, Burdwan University from 24.07.2018 to 13.08.2018 on the topics Operator Theory – I and Operator Theory – II in the date 01.08.2018.
6. An invited lecture given in Short Term Course on Research Methodology for college and university teachers as well as Senior Research Scholars during November 21 – November 27, 2017 organized by Human Resource Development Centre (HRDC) formerly Academic Staff College, University of Calcutta on "Introduction to Quantum Information" on the day November 22, 2017.
7. Two invited lectures given in Refresher Course in Mathematical Sciences at Burdwan University on 3.1.2011. Topic- Analytical Mechanics- Some fundamental aspects.
8. Two invited lectures given in Refresher Course in Mathematical Sciences at Jadavpur University on 6.11.2010. Topic- Classical Mechanics- Some aspects.
9. Five invited lectures given in Refresher Course in Mathematical Sciences at Dept. of Applied Mathematics, University of Calcutta on 3.8.10., 7.8.10, 10.8.10, 12.8.10, 14.8.10, on Analytical Mechanics, Functional Analysis and Probabilistic Methods.
10. Act as an evaluator on 79th Orientation Programme, on 22.7.09, organized by Academic Staff College, University of Calcutta.
11. Organized the Refresher Course in Mathematics as joint Co-ordinator, held at the Dept. of Applied Mathematics, C.U., during November 6-25, 2006.
12. Participated in the Orientation Program, Academic Staff College, C.U., February 20 - March 21, 2001.

20. Organization of SYMPOSIUM / WORKSHOP / SCHOOL / TRAINING COURSE ETC.:

1. Convener of National Symposium On Recent Trends in Applied Mathematics 2019 (RTAM19) Thrust areas: Computational Mathematics and Quantum Mechanics, March 12-14, 2019, Organized by the Department of Applied Mathematics, University of Calcutta under UGC-DSA SAP Phase-III.
2. Convener of National level Symposium on "Role of Mathematics in Changing World", on 22nd December, 2018, celebrating "National Mathematics Day" on occasion of birthday of great Indian Mathematician Srinivasa Ramanujan, organized jointly by Department of Applied Mathematics and Department of Pure Mathematics, University of Calcutta.
3. Organized a special lecture by Dr. Aditi Sen De, HRI, Allahabad on occasion of celebrating Bhatnagar Award in Physical Science in the year 2018 on the day 18.12.18.
4. Organized Mahadev Dutta Memorial Lecture on 01.10.18 given by Prof. Govindan Rangarajan, IISc, Bangalore.
5. Convener of National Symposium On Recent Trends in Applied Mathematics 2018 (RTAM18) Thrust areas: Computational Mathematics and Quantum Mechanics, March 26-28, 2018- A tribute to Professor

Satyendra Nath Bose on his 125th Birth Anniversary, Organized by the Department of Applied Mathematics, University of Calcutta under UGC-DSA SAP Phase-III.

6. Joint Convener of International Symposium on New Frontiers in Quantum Correlations (ISNFQC18) during 29th January to 2nd February 2018 held at S. N. Bose National Centre for Basic Sciences, Kolkata on occasion of 125th birth anniversary of Prof. S. N. Bose.
7. Convener of National Symposium ON Recent Trends in Quantum Theory 2017(RTQT17) during March 09-10, 2017, Organized by the Department of Applied Mathematics, University of Calcutta under UGC-DSA SAP Phase-III.
8. Joint Convener of International Conference on Frontiers in Applied Mathematics and its Computational Aspects (ICFAM-CA:2011) during March 15-17,2011, Organized by the Department of Applied Mathematics, University of Calcutta.
9. Convener of a National Level Symposium on Trends and Challenges in Quantum Theory under UGC-DSA programme, held at the Dept. of Applied Mathematics, C.U., February 27-28, 2008.
10. Member of the Organizing committee of International Seminar on Science, Culture and Social Change, held at University of Calcutta during January 18-20, 2007.
11. Joint Convener of the One-day Symposium on Mathematical Biology in the perspective of modern trends, Dept. of Applied Mathematics, C.U., February 16, 2005.
12. Joint Convener of the Two-day Symposium on Recent Advances in Mathematical Physics, Dept. of Applied Mathematics, C.U., March 12-13, 2002.

21. Membership of Learned Societies:

Indian Statistical Institute, Kolkata; Calcutta Mathematical Society; Asiatic Society, Kolkata.

22. Other notable activities:

Referee/Reviewer of the journals Physical Review A, Physics Letters A, Quantum Information Processing, Journal of Physics A, Physica Scripta, European Physics Letters, Physica A, Mathematical Review, etc.

DEBASIS SARKAR

Date:30.09.2020