Curriculum Vitae

Present Address

Dr. Priyam Das
Assistant Professor,
Bankura Sammilani College,
Kenduadihi, Bankura,
West Bengal – 722102, India.

Email: daspriyam3@gmail.com

Permanent Address

C/o Dr. Prabir Kr. Das
Gurupally (West),
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West Bengal – 731235, India.

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Academic Qualification

Total Number of Teaching/Research Experience after Ph.D.: 12 years 09 month

- **Positions held:**
  - **Assistant Professor, D**epartment *of Physics, Bankura Sammilani College, Bankura* – ***December 2019 – till date***. **(5 years 1 months)**
  - **Assistant Professor,** *Department of Physics, Amity Institute of Applied Science,* ***Amity University – Kolkata, February 2018 – December 2019*** **(01 year 10 months).**
  - **Research Associate,** *Department of Physics,* ***Indian Institute of Technology Delhi****, New Delhi, India,* ***May 2016 – February 2018*** **(01 year 09 months)**.
  - **Postdoctoral Research Fellow,** *Institute of Nuclear Physics,* ***Hacettepe University****, Ankara, Turkey,* ***December 2014 – March 2016*** **(01 year 03 months)**.
  - **Visiting Research Fellow,** Department of Physicial Sciences, ***Indian Institute of Science Education and Research – Kolkata****, India,* ***May2014 – November 2014*** **(06 months)**.
  - **Research Fellow,** *Center for Quantum Technologies,* ***National University of Singapore****, Singapore,* ***February 2012 – March 2014*** **(02 years 02 months).**
  - **Research Assistant**, *Center for Quantum Technologies,* ***National University of Singapore****, Singapore,* ***July 2011 - September 2011*** **(02 months).**
- **Academics:**
  - **Doctor of Philosophy (Ph.D. in Physics) – December 2011**
    Title **: An investigation of the collective modes and phases of Bose-Einstein condensates**
    Supervisor **: Prof. Prasanta K. Panigrahi**
    Institute **:** *Indian Institute of Science Education and Research (IISER) – Kolkata, India*
  - **Junior Research Fellow,** *Physical Research Laboratory, Ahmedabad, India,* **2006 – 2008**.
  - **Master of Science (M.Sc. in Physics),** *Indian Institute of Technology, Guwahati, India,* **2006**, (**CPI: 8.25 out of 10**).
  - **Bachelor of Science (B.Sc. in Physics),** *Visva-Bharati University, Santiniketan, India,* **2004**, (**Percentage of marks:70.3%**).
  - **Pre-Degree Examination (Science),** *Visva-Bharati University, Santiniketan, India,* **2001**, (**Percentage of marks:79%**).
  - **School Certificate Examination,** *Visva-Bharati University, Santiniketan, India,* **1999**, (**Percentage of marks:79.1%**).

Research Interests

- **Ultra-cold atomic gasses and Bose Einstein Condensation,** Analog gravity**,** Sonic Black-hole
- **Quantum Optics** - light-matter and interactions, Quantum Simulation, Single photon transport,
- **Ultra-cold Chemistry – c**ontrolling chemical reaction front through various excitations
- **Quantum Information theory**: Entanglement and Nonclassicality

Research Projects / Fundings

1. Project Title	:	**Study on Transfer of Vortices and Vortex Entanglement via Dicke Superradiance in Atomic BECs**
2. Project cost	:	**INR 20,05,528/- (Twenty Lakhs Five Thousands Five Hundred Twenty Eight)**
3. Status	:	**Approved (Ongoing)**

Membership of Professional bodies

- Life member of ISAMP (Indian Society for Atomic and Molecular Physics), since January 2017.
- Life member of e-COST (**E**uropean **Co**operation in **S**cience and **T**echnology), since October 2015.

Professional Duties as Referee for various Journals

- ***Journal of Physics A: Mathematical and Theoretical, IOP Publishing.***
- ***Journal of Physics B: Atomic Molecular and Optical Physics, IOP Publishing.***
- ***SOP Transaction on Theoretical Physics, Scientific Online Publishing.***
- ***International Journal of Geometric Methods in Modern Physics, World Scientific.***

List of Publications

1. A. Jana, I. Kaur, **Priyam Das**, Breakdown of Superfluidity of Quantum Liquids in Spin-Orbit coupled Bose-Einstein Condensates, to be communicated soon for publication in Phys. Rev. A (2025).
2. A. Dasgupta, P. Das, **Priyam Das**, Charged rotating Sonic Black-Hole in Tonk-Girardeau Regime, to be communicated soon for publication in European Physical Journal C (2025).
3. S. Pal, A. Sukla, D. Singh, **Priyam Das**, P.K. Panigrahi, Solitons like Bubbles and Quantum Droplet through Augmented GP Equation, to be communicated soon for publication in J. Phys. B (2025).
4. Sayan Mitra, Charulata Si, **Priyam Das** and P.K. Panigrahi, Impurity induced grey solitons and quantum droplets in Bose-Einstein Condensate, communicated for publication in Nature Scientific Reports (2025).
5. S. Modok, **Priyam Das**, Challenger Mishra and P.K. Panigrahi, Chemical Oscillations in Ultra-cold Chemistry, **Europhys. Lett., 45**, 32003 (2024).
6. M. Günay, **Priyam Das**, E. Yuce and M. E. Tasgin, On-demand continuous-variable quantum entanglement source for integrated circuits, ***Nanophotonics***, **12**, 229 (2023). [PDF]
7. S. Modok, **Priyam Das**, and P.K. Panigrahi, Coherent Quantum State Transfer in Ultra-cold Chemistry, ***Euro. Phys. J. D.*** 76, 174 (2022). [PDF]
8. **Priyam Das**, A. Khan and A. Pathak, Formation of solitonic bound state via light-matter interaction, Euro. Phys. J. D. 74, 213 (2020).
9. **Priyam Das**, *Lattice and Quintic Nonlinearity Induced Stripe Phase in Bose-Einstein Condensate in a Non-inertial and Inertial Frame,* ***J. Phys. Commun.*** **2,** 055012 (2018).
10. **Priyam Das,** Ayan Khan and Prasanta K. Panigrahi, *Emerging novel phases of Bose-Einstein Condensate for various topology,* ***Journal of Physics***: Conf. Series **875** 082009(2017).
11. **Priyam Das**, Mehmet EmreTasgin and Ozgur E. Mustecaplioglu, *Collectively Induced Many-Vortices Topology via Rotatory Dicke Quantum Phase Transition*, ***New J. Phys.*****18**, 093022(2016).
12. **Priyam Das**, Ayan Khan and Prasanta K. Panigrahi, *Realization of Negative Mass Regime and Bound State of Solitons in Inhomogeneous Bose-Einstein Condensates*, ***Eur. Phys. J. D,*** **70,** 113 (2016).
13. **Priyam Das** and Prasanta K Panigrahi, *Controlled Generation of Nonlinear Resonances in Bose-Einstein Condensate*, ***Laser Phys.*****25**, 125501 (2015).
14. Dimitris G. Angelakis, **PriyamDas** and Changsuk Noh, *Probing the Topological Properties of the Jackiw-Rebbi Model with Light*, ***Nature Scientific Reports,*****4**, 6110 (2014).
15. **Priyam Das**, Changsuk Noh, Dimitris G. Angelakis, *Realization of Driven Nonlinear Schrödinger equation with stationary light*, ***Europhys. Lett.*** 103, 34001 (2013).
16. Prasanta K. Panigrahi, Rajneesh Atre, S. SreeRanjani, **Priyam Das** and Kumar Abhinav, *Bose-Einstein Condensates in a Harmonic Trap and Optical Lattice***,** Editor: Rajesh Srivastava, Rakesh Choubisa (Book: Atomic and Molecular Physics: Introduction to Advanced Topics), ***Narosa Publishing House,*** pp. 183 – 202 (2012). ***ISBN: 978-8184871692***
17. **Priyam Das**, Manan Vyas and Prasnata K. Panigrahi, *Loss of Superfluidity of Bose-Einstein Condensate in an Optical Lattice with Cubic and Quintic Nonlinearity*, ***J. Phys. B: At. Mol. & Opt. Phys.,*** **42**, 245304 (2009).
18. **Priyam Das**, T Soloman Raju, Utpal Roy and Prasanta K. Panigrahi, *Sinusoidal Excitation in Two Component Bose-Einstein Condensate in a Trap*, ***Phy. Rev. A***, **79**, 015601 (2009).

19. Prasanta K. Panigrahi, **Priyam Das** and Ayan Khan, *Bose Einstein condensate with a time varying scattering length in a trap*, Editor: E. Krishnakumar (Book: Advances in Atomic, Molecular and Optical Sciences), ***Allied Publishers Pvt. Ltd***,pp. 66 – 73(2007). **ISBN: 978-8184243413**
20. Challenger Mishra, **Priyam Das**, K. R. Dastidar and Prasanta K. Panigrahi, *New cross-phase modulated localized solitons in coupled atomic-molecular BEC*, [preprint: ***arXiv:1109.5571***].
21. **Priyam Das**, Sumona Gangopadhyay and Prasanta K. Panigrahi, *Effect of an Impurity on Grey Soliton Dynamics in Cigar-Shaped Bose-Einstein Condensate***,** [preprint: ***arXiv:1003.5745***].

Teaching : List of Courses taught

Theory

- CORE T2 - Mechanics [B.Sc.(H) Sem - I] (at Bankura Sammilani College)
- CORE T4 - Waves and Optics [B.Sc.(H) Sem-II] (at Bankura Sammilani College)
- CORE T6 - Thermal Physics [B.Sc.(H) Sem-III] (at Bankura Sammilani College)
- CORE T9 - Elements of Modern Physics [B.Sc.(H) Sem-IV] (at Bankura Sammilani College)
- CORE T11 - Quantum Mechanics [B.Sc.(H) Sem-V] (at Bankura Sammilani College)
- CORE T14 - Statistical Physics [B.Sc.(H) Sem-VI] (at Bankura Sammilani College)
- DSE T2 - Classical Dynamics [B.Sc.(P) Sem - V] (at Bankura Sammilani College)
- PHYS604 - Classical Mechanics (M.Sc. (AP) - Physics) (at Amity University Kolkata)
- PHYS123 - Quantum Mechanics (B.Sc. (H) - Physics) (at Amity University Kolkata)
- PHYS113 - Applied Physics – II (B. Tech. ECE & MAE) (at Amity University Kolkata)
- PHYS131 - Basic Physics – II for Bio Science (B. Tech. Bio-Tech) (at Amity University Kolkata)
- PHYS132 - Engineering Physics - B.Tech. (CSC, ECE, MAE & CE) (at Amity University Kolkata)
- PHYS104 - Physics - I (B.Sc. (H) - Chemistry) (at Amity University Kolkata)

Laboratory

- CORE P6 - Thermal Physics LAB [B.Sc.(H) Sem-III]
- CORE P8 - Mathematical Physics Lab - SCILAB [B.Sc.(H) Sem-IV]
- CORE P11 - Quantum Mechanics LAB [B.Sc.(H) Sem-V]
- CORE P14 - Statistical Mechanics LAB [B.Sc.(H) Sem-VI]
- PHYS113 - Basic Laboratory Courses for Applied Physics – II (B.Tech. ECE & MAE)
- PHYS132 - Basic Laboratory Courses for Engineering Physics - B.Tech.(CSC, ECE, MAE, CE)
- PHYS104 - Basic Laboratory Courses for Physics - I (B.Sc. (H) - Chemistry)

Project Students supervised

Ongoing

1. **Aniruddha Rana, Junior Research Fellow** at Bankura Sammilani College**,** *working on the project, entitled "Study on Transfer of Vortices and Vortex Entanglement via Dicke Superradiance in Atomic BECs"*

Completed

1. **Mr. NIlanjan Mukherjee**, Post-graduate, M.Sc. (Applied Physics) at Amity University Kolkata, successfully defended his project, entitled "*Ground State of Binary Condensate with Josephson coupling*".
2. **Mr. Priyam Das**, Post-graduate, M.Sc. (Applied Physics) at Amity University Kolkata, successfully defended his project, entitled "*Analog gravity in Tonk-Girardeau regime*".
3. **Ms. Alia Imam ****,** Post-graduate, M.Sc. (Applied Physics) at Amity University Kolkata, successfully defended his project, entitled "*Sonic Black Hole in Bose-Einstein Condensate*".
4. **Mr. Sayan Mitra**, Under-graduate, B.Sc. (H) Physics, successfully defended his project, entitled "*Dyanmics of Bose-Einstein condensate in a harmonic trap*."
5. **Ms. Charulata Sil**, Under-graduate, B.Sc. (H.) Physics, successfully defended his project, entitled "Classical Phase transition in Bose-Einstein condensate."
6. **Mr. Md. Sk Mohsin**, Under-graduate, B.Sc. (H) Physics, successfully defended his project, entitled "Modulational Instability of Bose-Einstein condensate."
7. **Mr. Sarashwat Acharyya**, Under-graduate, B.Sc. (H) Physics, successfully defended his project, entitled "An application of particle in a box: Quantum dot."
8. **Mr. Kumar Aryan**, Under-graduate, B.Sc. (H) Physics, successfully defended his project, entitled "Nonlinearity and Solitons – a brief overview."

9. **Mr. Anirban Dasgupta,** Post-graduate at NIT Jamshedpur, M.Sc. (Physics) Physics, successfully completed his summer project, entitled "*Guage field induced Sonic Black-hole analog in Tonk-Girardeau Limit*."

Achievements: Scholarship and Awards

1. **Received Core Research Grant (CRG) from Science and Engineering Research Board (SERB), Department of Science & Technology (DST), CRG/2022/002421 in the year 2023.**
2. Received **Postdoctoral Research Fellowship** from the project "TUBITAK-1001, Grant No. 114F170" at Hacettepe University, Ankara, Turkey in the year 2014.
3. Received **Postdoctoral Research Fellowship** from the project "**Theory Group Dimitris Angelakis [R-710-000-019-271]**" at Center for Quantum Technologies, National University of Singapore, in the year 2012.
4. Selected as a **Senior Research Fellow** at Indian Institute of Science Education and Research, Kolkata, India, 2008 – 2011.
5. Selected as a **Junior Research Fellow** at Physical Research Laboratory, Ahmadabad, India, from 2006 - 2008.
6. Qualified in **Joint Entrance Screening Test (JEST-06)** conducted jointly by the various research institutes in India, in the year 2006.
7. Recipient of **Jagodish Bose National Science Talent Search (JBNSTS)** junior award in 2001 and participated various programs in science, in the year 2001-02.
8. Recipient of **scholarship on merit** in both **10th and 12th** standard from VisvaBharati University in the year 1999 and 2001.

Invited Talks/Oral presentations

1. *Quantum Liquids in Spin-orbit coupled Bose-Einstein Condensates*, Conference on Nonlinear Systems & Dynamics (CNSD 2025), Bharathidasan University, Tiruchirappalli (March 2025).
2. *Phase Transition and Vortex Topology*, International Conference on Complexity and Nonlinear Dynamics In Stem (CNLDS – 2023), Indian Institute of Technology Hyderabad (June 2023).
3. *Coherent Quantum State Transfer through Chemical Oscillations in Ultra-Cold Chemistry,* 9th Topical conference on Ultrafast Photonics and Quantum Science, Physical Research Laboratory, Ahmedabad (February 2024).
4. *Rotatory Dicke Phase Transition: Generation of Vortices*, Summer school of Quantum Information and Quantum Technology (QIQT) -2022, Indian Institute of Science Education and Research (IISER) – Kolkata (June 2022).
5. *Coherent State transfer of Atomic to Molecular Bose-Einstein condensates,* International Conference on Quantum & Atom Optics, Indian Institute of Technology Patna, (December 2018).
6. *Collectively Induced Many-Vortices Topology via Rotatory Dicke Quantum Phase Transition,* CQT10 Conference, Center for Quantum Technologies, National University of Singapore, Singapore, (December 2017).
7. *Rotatory Dicke quantum phase transition: Many-vortices topology,* National Conference on Atomic and Molecular Physics, Physical Research Laboratory, Ahmedabad, India (January 2017).
8. *Realization of Strongly Correlated Many-body Physics withStationary Light,* Invited Talk at Koc University, Istanbul, Turkey (April 2015).
9. *Nonlinear Transport Phenomena with Atom-Photon Interactions,* Conference on Recent Trends in Information Optics and Quantum Optics, Indian Institute of Technology Patna, India, (November 2014).
10. *Existence of Jackiew-Rebbi Model with Stationary Light,* Recent Trends in Field Theory, Banaras Hindu University, Banaras, India, (November 2014).
11. *Controlled Photon Transport*, Workshop on Quantum Paradigms and Security, Indian Institute of Science Education and Research – Kolkata, India, (September 2014).
12. *Realization of Driven Nonlinear Schrodinger equation with Stationary Light,* Symposium on Atomic, Molecular and Optical Physics 2012, Indian Institute of Science education and Research – Kolkata, India, (December 2012).
13. *Investigation of Various Nonlinear Excitations in Bose-Einstein Condensates,* Indian Institute of Technology, Guwahati, India, (December 2012).
14. *Solitons & Bose-Einstein Condensates,* Raman Research Institute, Bangalore, India, (June, 2011).
15. Dynamics and Phase Transitions of Bose-Einstein Condensates, Indian Institute of Astrophysics, Bangalore, India (March 2011).

16. *Density wave ground state in Bose-Einstein Condensate in an optical lattice,* International Conference on Cold Atoms (ICCA), 2008, held at Indian Institute of Science Education and Research (IISER), Kolkata, India(December 2008).
17. *A bird's eye view to Bose-Einstein Condensate,* Students Forum, Indian Institute of Science Education and Research, Kolkata, India(September 2009).
18. Dynamics of Feshbach managed soliton solutions in Two-Component Bose-Einstein condensates, Theoretical Physics Division, Physical Research Laboratory, Ahmedabad, India (January 2007).

Projects Undertaken

1.	*Title*	:	Solar Pond
	Supervisor	:	Dr. Arani Chakravarti
	Place	:	Visva Bharati University, Santiniketan
	Period	:	B.Sc.(H) - Physics
2.	*Title*	:	Electronic Structure of substitutional disordered System: Various Approximations
	Supervisor	:	Dr. Subhradip Ghosh
	Place	:	Indian Institute of Technology, Guwahati
	Period	:	M.Sc. Physics
3.	*Title*	:	Dynamics of Solitons in two-component Bose-Einstein condensates
	Supervisor	:	Prof. Prasanta K. Panigrahi
	Place	:	Physical Research Laboratory
	Period	:	Ph.D. course work

Computational Skill

- Operating Systems: **Linux, Mac,** and **Windows**
- Programming Languages: **FORTRAN**, **MATLAB,** and C.
- Software Packages: **Mathematica**, **Gnuplot, Latex** etc.

Personal Information

- Father's Name : **Dr. Prabir Kr. Das**
- Mother's Name : **Mrs. Sandhya Das**
- Spouse Name : **Mrs. Shilpi Mukherjee**
- Date of Birth : **01st January'1983**
- Sex : **Male**
- Nationality : **Indian**
- Marital Status : **Married**
- Language: **Bengali, English, Hindi**
- Passion :**Photography,Solving Math. puzzle**.