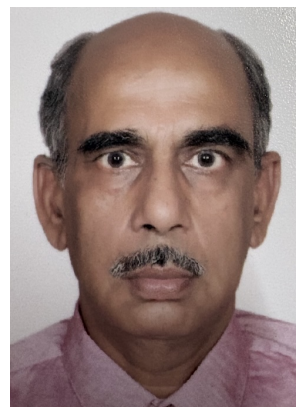


CURRICULUM VITAE

*Prof. Bhabani Prasad Mandal, **FNASc***

(Institute of Science, Banaras Hindu University)



Personal Information

Present Position: Senior Professor, Theoretical Physics

Contacts:

Offical

Department of Physics , Institute of Science
Baranas Hindu University, Varanasi-221005
Uttar Pradesh, India

Email: bhabani.mandal@gmail.com

bhabani@bhu.ac.in

Skype Id: [bhabani.mandal](#)

Scopus Author Id: [7102080754](#)

Orcid id: [0000-0002-8071-7989](#)

Phone (mobile: + (91) 9935048298

Nationality: Indian

Sex: Male

Residencial

New G-1 (Near University Club)
Jodhpur Colony

BHU Campus, Varanasi-221005,
Uttar Pradesh, India

Phone: + (91) 0542-2986164

Date of Birth : 29/01/1968.

Marital Status: Married

Award/Honorus Received

- Visiting Scientist, Yukawa Institute of Theoretical Physics, Kyoto University, Dec 2025 to Jan 2026
- C N R Rao Education Foundation Award for excellence in research for the year 2022-23, Awarded in 2024.
- Fellowship, National Academy of Science, Prayagraj, 2023
- DAAD visitation fellowship 2020, 2021
- JSPS Bridge Fellowship- 2015-16
- JSPS postdoctoral fellowship for the years 2001-2003.
- ICSC World Laboratory (Lausanne, Switzerland) award in theoretical physics in memory of SUBRAHMANYAN CHANDRASEKHAR.
- Visiting Associate of S.N. Bose National Center for Basic Sciences
- University Gold Medal (Award for University rank # 1) in M. Sc in 1990.
- University Gold Medal (Award for University rank # 1) in B. Sc in 1988.
- University Scholarship for the years 1986 to 1990.
- Merit Scholarship for the years 1983 to 1990.

Education

- Ph D : IIT-Kanpur, 1990-1995
(Supervisor : Prof. S. D Joglekar, Topic : BRS symmetry and Superspace formulation of gauge theories)
- M.Sc : Visva Bharati University, Santiniketan, 1988-1990, University Topper.
Specialisation : Particle Physics .
- B. Sc : Visva Bharati University, Santiniketan, 1985-1988, University Topper.

* Appointments held

- Senior Professor : Banaras Hindu University, Varanasi, 2020- Present
- Professor : Banaras Hindu University, Varanasi, 2010 -2020
- Associate Professor : Banaras Hindu University, Varanasi, 2007-2010
- Reader in Physics : Banaras Hindu University, Varanasi, 2004-2007

- **Lecturer of Physics** : Maulana Azad College, Calcutta University, Kolkata, 2002-2004
- **JSPS postdoctoral Fellow** : Ochanomizu University, Tokyo, Japan, 2001-2003
- **Senior Research Associate** : SNBNCBS, Kolkata, 2000-2001
- **Senior Research Associate** : SINP, Kolkata, 1997-2000
- **Postdoctoral Fellow** : Institute of Physics, Bhubaneswar, 1995-1997

Professional Qualification/Membership:

- * **Panel Member, Science Education Program, Indian Academy of Science, Bangalore**
- * **Vice President (2020 - present), Indian JSPS Alumni Association**
- * **Life member Indian Physics Association**
- * **Life member, Indian JSPS Alumni Association (IJAA)**

Grants Awarded

- **Rs. 5,00,000/. Incentive Grant, IOE, BHU 2024.**
- **Rs. 1,00,000/-International Travel Grant, Japan, BHU, 2025.**
- **Rs. 1,00,000/-International Travel Grant, Greece, BHU, 2024.**
- **Rs. 1,00,000/-International Travel Grant, Turkey, BHU, 2023.**
- **Grant Received from DAAD (Germany)** For Research Stays and Collaboration (for University Academics and Scientists) for 2020 and 2021. [Could not avail during 2020 due to Pandemic]
- **Rs. 8,00,000/ , Incentive Grant, IOE, BHU 2020-2024.**
- **Rs. 6,60,000/= , MATRIX-project, SERB, DST Govt. of India, 2018, A quest for new exactly solvable system using exceptional orthogonal polynomials.**
- **Rs. 2,00,000/-International Travel Award , Germany, SERB, DST Govt. of India, 2017.**
- **Rs. 60,000/-International Travel Award , Kyoto Japan, BHU 2016.**
- **Rs. 25,48,000/=(approx.) from Department of Science and Technology, Government of India (Sanction Grant No: SR/S2/HEP-0009/2012) for working on the project, Non-Hermitian quantum theories and its applications?.**
- **Rs. 2,00,000/-International Travel Award, Max. Planck, Dresden Germany, SERB, DST Govt. of India, 2012.**

- Rs. 50,000/-, International Travel Award, Paris, France BHU 2011.
- Rs. 9,50,000/+ (approx.) from Department of Science and Technology, Government of India (Sanction Grant No: SR/S2/HEP-29/2007) for working on the project, Generalized BRST transformations and its applications to gauge field theories?
- Young Scientist grant (2001) from DST, Government of India: (Could not accept as went abroad for postdoc)

Administrative Experiences: • Serving as Chairman, Students

Feedback Implementation Committee, (2025-Present)

- Serving as Member NEP committee BHU and I.Sc (2022-present)
- Served as In-Charge of departmental Library (2017-2021)
- Serving as convener, Theoretical Physics Seminar Circuit (SERB program), Varanasi Chapter, 2018-present
- Served as in-Charge, Computer Teaching Laboratory, 2010-2021
- Served as in-Charge, Nuclear Physics Laboratory, 2014-2016, 2021-present
- Served as convener, Academic committee. Department of physics, 2021-present
- Served as member, Policy Planning Committee. Department of Physics, 2021-present

Research Experiences: **36 Years**

- Doctoral Level: 5.5 years
- Postdoctoral Level: 6.5 Years
- As faculty member: 24 Years

Areas of Research Interest

- Non-Hermitian Quantum theories and their applications.
- Non-Hermitian Topology
- Generalised BRST symmetry and its applications to gauge theories.
- Quantum Information Theory.
- Exceptional Orthogonal Polynomials and their applications .
- Superspace formulation of Gauge Theories.

LIST of PUBLICATIONS

In International Journals: 141: Conference Papers: 17 H-Index : 30 Total Citation: 3025+ . Submitted in Journals: 5 Phy Rev: 15 , JHEP: 1, PLB: 8, PLA: 12, NPB: 5, EPJC:10, Annals of Physics: 20, JPA:6, JMP:11, EPL:12, EPJ Plus: 6 PETE:2 JCP:1, Grav. Cos:1, IJTP/MPLA/IJMPA: 23, Pramana: 3, Acta Ploytechnica: 2, CTP: 2, Adv. High Phy:1

Published and communicated in Refereed International Journals

Submitted: 2026

1. PT -symmetric two flavor neutrino oscillations: A G -norm approach, Kritika Rushiya , Gaurav Hajong , Sabila Parveen , Bhabani Prasad Mandal and Poonam Mehta (in preparation).
2. Quantum phase transitions and information-theoretic measures of a spin-oscillator system with non-Hermitian coupling, Gargi Das, Aritra Ghosh, Bhabani Prasad Mandal, [arXiv: 2506.23356](#) (Submitted in AOP)
3. Emergence of Hermitian topology from non-Hermitian knots, Gaurav Hajong, Ranjan Modak, Bhabani Prasad Mandal [arXiv: 2504.20167](#)(Submitted in PRB)
4. Tunneling time in non-Hermitian space fractional quantum mechanics, Mohammad Umar, Vibhav Narayan Singh, Bhabani Prasad Mandal. ([arXiv:2504.04082](#))[Submitted JMP]
5. Exploring topological entanglement through Dehn surgery A Dwivedi, S Dwivedi, Vivek Singh, P Ramadevi and Bhabani Prasad Mandal. [arXiv: 2402.07459](#)

Published: 2026

6. On BRST-Related Symmetries in the FLPR Model with Gribov Ambiguities, B P Mandal, S K Rai, R Thibes, [arXiv:2511.09752](#) (Accepted Nuclear Physics B)

Published: 2025

7. Relativistic particles in super-periodic potentials: exploring graphene and fractal systems, Sudhanshu Shekhar, Bhabani Prasad Mandal, Anirban Dutta, **Physical Review B** **112**, 165106 (2025) DOI: 10.1103/s82p-5sxv arXiv:2412.13220.
8. Phantom BTZ Black Holes: Thermal Properties Under Perturbative Corrections, Kumar Sambhav Upadhyay; Sudhaker Upadhyay, Bhabani Prasad Mandal **Nuclear Physics B**, **1018**, 117078 (2025) <https://doi.org/10.1016/j.nuclphysb.2025.117078>
9. Isochronous oscillator with a singular position-dependent mass and its quantisation. Aritra Ghosh, Bhabani Prasad Mandal, Bijan Bagchi. (**arXiv No: 2501.08424** **Jour. of Math Phys** **66**, 082101 (2025) <https://doi.org/10.1063/5.0271167>.
10. Dirac-isotonic oscillators in $(1 + 1)$ and $(2 + 1)$ dimensions, Aritra Ghosh, Bhabani Prasad Mandal. **Physics Letter A** **545**, 130488 (2025). <https://doi.org/10.1016/j.physleta.2025.130488>
11. DNA Unzipping as PT-Symmetry Breaking Transitions in Polymeric Systems, Tanmoy Pal, Ranjan Modak, Bhabani Prasad Mandal (**arXiv: No: 2212.14394**)[**Physical Review E** (2025) 111 (1), 014421] DOI: 10.1103/PhysRevE.111.014421
12. Polyadic Cantor potential of minimum lacunarity: Special case of super periodic generalized unified Cantor potential Mohammad Umar, Mohammad Hasan, Vibhav Narayan Singh and Bhabani Prasad Mandal , **arXiv: 2405.11617 J. Phys. A: Math. Theor.** **58**, 065302, (2025) <https://doi.org/10.1088/1751-8121/ada987>
13. Quantum tunneling from a new type of generalized Smith-Volterra-Cantor potential Mohammad Umar, Vibhav Narayan Singh, Mohammad Hasan and Bhabani Prasad Mandal , **arXiv: 2312.10501, J. Math. Phys.** **66**, 032102 (2025) <https://doi.org/10.1063/5.0203470>
14. Renormalization Group Approach for modified VdP Oscillator with $\mathcal{PT}$ Symmetric Non-Hermitian Interaction Biswajit Bhowmick, Rohit Mahendra Shinde, Bhabani Prasad Mandal. (**arXiv: No: 2310.18576**),**International Journal of Theoretical**

Physics 64 (2), 34, (2025)

<https://doi.org/10.1007/s10773-025-05896-9>

15. New solutions of Isochronous potentials in terms of exceptional orthogonal polynomials in heterostructures Satish Yadav, Rahul Ghosh, Bhabani Prasad Mandal (**International Journal of Theoretical Physics** 64 (2), 41, (2025)) **arXiv: 2401.00995**
<https://doi.org/10.1007/s10773-024-05854-x>

Published: 2024

16. Generating QES potentials supporting zero energy normalizable states for an extended class of truncated Calogero Sutherland mode. Satish Yadav, Sudhanshu Shekhar , Bijan Bagchi , Bhabani Prasad Mandal **Annals of Physics**, 470, 169822 (2024).
<https://doi.org/10.1016/j.aop.2024.169822>

17. Hellmann Feynman Theorem in Non-Hermitian system G Hajong, R Modak, BP Mandal **arXiv preprint arXiv:2308.13914** (**PHYSICAL REVIEW A** 109, 022227 (2024), DOI: 10.1103/PhysRevA.109.022227.

18. A Class of Exactly Solvable Real and Complex PT Symmetric Reflectionless Potentials, Suman Banerjee, Rajesh Kumar Yadav, Avinash Khare, Bhabani Prasad Mandal, arXiv No: 2308.05917 (2023). **J. Math. Phys.** 65, 032101 (2024)
<https://doi.org/10.1063/5.0174810>

Published: 2023

19. Effect of quantum gravity on the specific heat of solids, Sheikh Riasat and B P Mandal, arXiv: 2304.13673, **EPJ-Plus** 138, 943 (2023).
<https://doi.org/10.1140/epjp/s13360-023-04585-y>

20. Quantum tunnelling from a new type of Unified Cantor Potential, Mohammad Umar, Vibhav Narayan Singh, Mohammad Hasan Bhabani Prasad Mandal, arXiv No: 2308.08180 (2023). **Annals of Physics**, 458, 169485 (2023),
<https://doi.org/10.1016/j.aop.2023.169485>

21. A unifying framework for BRST and BRST related symmetries, Bhabani Prasad Mandal, Sumit Kumar Rai, R. Thibes, **arXiv: 2210.15583 (EPL, 144, 14001 (2023)).**
<https://doi.org/10.1209/0295-5075/ad0177>
22. Knot-Quiver correspondence for double twist knots, Vivek Kr. Singh, S. Chauhan, A. Dwivedi, P. Ramadevi, B.P. Mandal, S. Dwivedi **arXiv No: 2303.07036 Phy. Rev. D 108, 106023.** <https://doi.org/10.1103/PhysRevD.108.106023>
23. Solutions of (1+1)-dimensional Dirac equation associated with exceptional orthogonal polynomials and the parametric symmetry, Suman Banerjee, Rajesh Kumar Yadav, Avinash Khare, Nisha Kumari, Bhabani Prasad Mandal (**arXiv: No: 2211.02557 [IJMPA 38, 2350069 (2023)]**). DOI: 10.1142/S0217751X23500690
24. Effect of Minimal Length on Landau Diamagnetism and de Haas-van Alphen Effect, Md. Abhishek and Bhabani Prasad Mandal, **EPJ Plus 138:370 (2023)** (**arXiv: No: 2206.04407**) <https://doi.org/10.1140/epjp/s13360-023-03975-6>
25. Uncertainty relation in Non-Hermitain Quantum Mechanics, Namarta Shukla, Ranjan Modak, Bhabani Prasad Mandal (**Phys. Rev. A 107, 042201 (2023)**).(**arXiv: No: 2206.02844**) DOI: 10.1103/PhysRevA.107.042201
26. Tunneling from general Smith-Volterra-Cantor fractal potential. Vibhav Narayan Singh, Mohammad Umar, Mohammad Hasan, Bhabani Prasad Mandal . **J. Math. Phys. 64, 032101 (2023);** <https://doi.org/10.1063/5.0109426>
27. Quantum tunneling from family of Cantor potentials in fractional quantum mechanics Vibhav Narayan Singh, Mohammad Umar, Mohammad Hasan, Bhabani Prasad Mandal. (**arXiv: No: 2301.00674**) **Annals of Physics** 450, 169236 (2023). <https://doi.org/10.1016/j.aop.2023.169236>

2022

28. Supersymmetry and Shape Invariance of exceptional orthogonal polynomials, Satish Yadav, Avinash Khare, Bhabani Prasad Mandal, **Annals of Physics**, 444, 169064 (2022) <https://doi.org/10.1016/j.aop.2022.169064>

29. BFV quantization and BRST symmetries of the gauge invariant Fourth order Pais - Uhlenbeck Oscillator, B P Mandal, V K Pandey, R Thibes, **Nuclear Physics B**, 982, 115905 (2022). <https://doi.org/10.1016/j.nuclphysb.2022.115905>
30. BRST symmetry as a mechanism for confinement in the inter gauge framework, Haresh Raval and Bhabani Prasad Mandal. (**Physics Letter B** 832, 137222) <https://doi.org/10.1016/j.physletb.2022.137222> .
31. Rational extension of many particle systems, Bhabani Prasad Mandal, **Acta Polytechnica** 62(1): 90- 99, 2022, <https://doi.org/10.14311/AP.2022.62.0090>
- 2021**
32. One parameter family of rationally extended isospectral potentials, R K Yadav, S Banerjee, N Kumari, A Khare and Bhabani Prasad Mandal **Annals of Physics** 436 (2022) 168679., <https://doi.org/10.1016/j.aop.2021.168679>
33. Topological entanglement and hyperbolic invariant, A Dwivedi, S Dwivedi, B P Mandal, P Ramadevi , V K Singh. **JHEP** 10, 172 (2021) . IF-5,875
34. Eigenstate entanglement entropy in PT invariant non-Hermitian system. Ranjan Modak, Bhabani Prasad Mandal, **Physical Review A**103,062416 (2021).
35. Examples of PT phase transition : QM to QFT, Bhabani Prasad Mandal, **Journal of Physics: Conference Series** 2038, 012017 (2021)
36. Soft-Collinear Effective Theory: BRST Formulation Sudhaker Upadhyay and Bhabani Prasad Mandal, **European Jour. of Phys. C** 81, 279 (2021).
37. General(ized) Hartman effect, M Hasan and B P Mandal, **Europhysics Letters** 133, 20001 (2021).
38. 2-Loop β function for non-Hermitian PT symmetric $ig\phi^3$ theory, Aditya Dwivedi and Bhabani Prasad Mandal, **Annals of Physics**, 425, 168382 (2021).
- 2020**
39. Role of PT symmetry in understanding Hartman effect, Mohammad Hasan , Vaibhav Narayan Singh, Bhabani Prasad Mandal. Eur. Phys. J. Plus (2020) 135: 640

40. New scattering features of quaternionic point interaction in non-Hermitian quantum mechanics, Mohammad Hasan and Bhabani Prasad Mandal , **Jour of Math. Phys.** 61, 032104 (2020)
41. QES solutions of a two dimensional non-conservative system. Bhabani Prasad Mandal, Brijesh Kumar Maurya and Aman K Singh , *Eur. Phys. J. Plus* (2020) 135: 327.
42. Tunneling time for locally period potential in space fractional quantum mechanics. Mohammad Hasan and Bhabani Prasad Mandal *EPJ Plus* 135, 248 (2020)
43. Hartman effect from layered PT-symmetric potentials, Mohammad Hasan and Bhabani Prasad Mandal , *EPJ Plus* 135, 84, (2020)

2019

44. GUP correction to Dirac Oscillator in the external magnetic field Vishakha Tyagi, Sumit Kumar Rai and Bhabani Prasad Mandal *EPL* 128 (2019) 30004.
45. Deconfinement to confinement as PT phase transition, Haresh Rawal and Bhabani Prasad Mandal, arxiv: 1805.02510, **Nuclear Physics B** **946**, 114699(2019)
46. Equivalence of two solutions of physical Massive Gravity, H. Rawal, K. Mishra and B P Mandal, Arxiv 1809.03886, *Int. Jour. of Mod. Phys. A.* **34** 19500700 (2019).
47. Conformal to Harmonic gauge for Bosonic string, Vipul Kumar Pandey and Bhabani Prasad Mandal. *Europhysics Letters* 125, 21001 (2019).
48. Reply to Comment by P. Bosso and S. Das,
Harshit Verma, Toshali Mitra and Bhabani Prasad Mandal. **Europhysics Letters** 125(1):10003 (2019).
49. Rationally extended many-body truncated Calogero-Sutherland Model, R K Yadav, A Khare, N Kumari and Bhabani Prasad Mandal, Arxiv:1807.05163 **Annals of physics**, 400, 189-197 (2019).
50. Some Aspects of Complex Quantum Theories: A Brief Note, Bhabani Prasad Mandal, *J. Mountain Res.* 14(1), 1-5 (2019). DOI: <https://doi.org/10.51220/jmr.v14i1.1>.

2018

51. Generalized quantum electrodynamics in the framework of Generalized BRST transformation, Krishnananda kumar Mishra, and Bhabani Prasad Mandal. **Europhysics Letter** 123, 41002 (2018).
 52. Schwinger's Model of Angular Momentum with GUP Harshit Verma, Toshali Mitra and Bhabani Prasad Mandal. **Europhysics Letter** 123, 30009 (2018).
 53. New Scattering features in non-Hermitian space fractional quantum mechanics, Md Hassan, Bhabani Prasad Mandal **Annals of Physics**, **396**, 371-385
 54. Non-perturbative to perturbative QCD via the FFBRST Haresh Raval, Bhabani Prasad Mandal, **Eur. Phys Jour. C** **78**, 416 (2018)
 55. Weyl Degree of Freedom in The Nambu-Goto String Through Field Transformation Vipul Kumar Pandey and Bhabani Prasad Mandal, **Euro Phys. Lett.** **122**, 21002 (2018). arXiv: 1805.05527.
 56. A class of exactly solvable rationally extended non-Central potentials, N Kumari, R K Yadav, A Khare and B P Mandal. **Jour. of Math. Phys.** **59**, 062103 (2018).
 57. Super Periodic Potential, Md Hassan, Bhabani Prasad Mandal **Annals of Physics** **391**, 240-262 (2018).
 58. Tunelling time in fractional quantum mechanics. Md Hassan and Bhabani Prasad Mandal, **Phy Lett A** **382**, 248 (2018).
 59. BRST quantization on torus Knot, V Pandey & Bhabani Prasad Mandal, Springer Proceedings in Physics, Vol 203, 513-516 (2018).
- 2017
60. A class of exactly solvable rationally extended Calogero-Wolfes type 3-body problems, N Kumari, R K Yadav, A Khare and B P Mandal. **Annals of Physics** 385, 57 (2017)
 61. Rationally extended shape invariant potentials in arbitrary D-dimensions associated with exceptional X_m polynomials, Rajesh Kumar Yadav ,Nisha Kumari , Avinash Khare & Bhabani Prasad Mandal, arXiv:1412.5445, Acta Polytechnica, 57 (6), 447 (2017)

62. Double Hodge theory for a particle on a torus, V Pandey & Bhabani Prasad Mandal
Adv. High Energy Physics, 2017, 1 (2017).
63. BRST symmetry for Torus Knot, V Pandey & Bhabani Prasad Mandal, **Europhysics Letters**, 119, 31003 (2017)
64. A short note on "Group theoretic approach to rationally extended shape invariant potentials" [Ann. Phys. 359 (2015) 46-54] A Ramos, B Bagchi, N. Kumari, A Khare, B P Mandal and R K Yadav. **Annals of Physics**, 382, 143(2017).
65. QES extension of Calogero model associated with exceptional orthogonal polynomials, B Basu- Mallick, Bhabani Prasad Mandal & P Roy, **Annals of Physics**, 380, 206 (2017).

2016

66. Scattering amplitudes for the rationally extended P T symmetric complex potentials ,Nisha Kumari, Rajesh Kumar Yadav, Avinash Khare, Bijan Bagchi, and Bhabani Prasad Mandal , **Annals of Physics** 373, 163 (2016).
67. Comments on interactions in the SUSY models , Sudhaker Upadhyay, Alexander Reshetnyak, Bhabani Prasad Mandal, **EPJC** 76, 391 (2016).
68. Parametric symmetries in exactly solvable real and P T symmetric complex potentials , Rajesh Kumar Yadav, Avinash Khare, Bijan Bagchi, Nisha kumari and Bhabani Prasad Mandal, **Jour. Of Math. Phys** 57, 062106 (2016).
69. Maximal Abelian gauge and a generalized BRST transformation , Shinichi Deguchi, Vipul Kumar Pandey, Bhabani Prasad Mandal **Physics Letter B** 756, (2016) 394. Impact Factor-6.2
70. Path Integral solution of a general non-central non-Hermitian potential Brijesh Kumar Mourya and Bhabani Prasad Mandal, Non-Hermitian Hamiltonians in Quantum Physics, Singer proceedings in Physics, V184, 319, (2016).
71. IR Finite Graviton Propagators in de Sitter Spacetime, Mir Faizal, Sudhaker Upadhyay & Bhabani Prasad Mandal ,Eur. Phys. J. C 76 (2016) 189 , , Impact Factor-5.1

72. Equivalence between two different field dependent BRST formulation, S. Upadhyay & Bhabani Prasad Mandal, arXiv: 1503.07390, IJTP 55, 1 (2016).

2015

73. PT phase transition in a (2+1) d relativistic system, Bhabani Prasad Mandal, K. Ali, B. K. Mourya & A. Ghatak, **Annals of Physics**. 363, 185 (2015). , Impact Factor-3.6
74. Relating Green's Functions in Perturbative Quantum Gravity, Sudhaker Upadhyay & Bhabani Prasad Mandal, **Eur. J. Phys. C** 75, 327 (2015). , Impact Factor-5.1
75. Batalin-Vilkovisky action of Chern-Simons theory in superspace , S. Upadhyay, M. Dwivedi & Bhabani Prasad Mandal, IJTP 54, 2076 (2015).
76. **Group theoretic approach to rationally extended shape invariant potentials** Rajesh Kumar Yadav , Nisha Kumari , Avinash Khare & **Bhabani Prasad Mandal**, **Ann. of Phys.** **359**, 46, (2015).
77. **A black potential for spin less particles**, A. Ghatak, M. Hasan and **B. P. Mandal**, **Phys. Lett. A** **379**, 1326 (2015).
78. **FF-antiBRST Transformations for the BLG Theory in Presence of a Boundary**, M. Faizal, S. Upadhyay and **B. P. Mandal**, **IJMPA** **30**, 1550032 (2015).
79. **Batalin-Vilkovisky action of Chern-Simons theory in superspace** S. Upadhyay, M Dwivedi and **B. P. Mandal**, **IJTP** **54**, 2076 (2015).
80. **Generalized BRST symmetry for arbitrary spin conformal field theory** Sudhaker Upadhyay, & **Bhabani Prasad Mandal** **Phys. Lett. B** **744**, 231 (2015).
81. **Complex Classical Mechanics of a QES Potential**, **B. P. Mandal**, S. S. Mahajan, (Comm. Theor. Phys. 64, 425) (2015).
82. **Emergence of Lowenstein-Zimmermann mass terms for QED_3** S. Upadhyay, M Dwivedi and **B. P. Mandal**, **IJMPA** **30**, 1550178 (2015).
83. **Imaginary interaction in minimum length** M. Faizal and **B. P. Mandal**, **Grav. Cosmol.** **21**, 4 , 270 (2015).

84. **Reciprocity in parity violating non-Hermitian system** A. Ghatak, B. k. Mourya, R. D. RayMandal and **B. P. Mandal**, IJTP 54, 3945 (2015).
85. **The Scattering amplitude for Rationally extended shape invariant Eckart potentials**, R. K. Yadav, A. Khare, **B. P. Mandal**, (Phys. Lett A 379, 67 (2015))
2014
86. **Gaugeon formalism in the framework of generalized BRST symmetry** S. Upadhyay and **B. P. Mandal**, Prog. Theor. Exp. Phys. 053B04 (2014).
87. **Critical coupling and coherent perfect absorption for ranges of energies due to a complex gain and loss symmetric system** M. Hasan, A. Ghatak and **B. P. Mandal**, Ann. of Phys. 344, 17 (2014).
88. **Finite field BRST symmetry for ABJM theory in N=1 supersapce**, M. Faizal, S. Upadhyay and **B. P. Mandal**, (Phys Lett. B 738, 201 (2014)).

2013

89. **Statistical Mechanics of DNA Rupture: Theory and simulations** S. Nath, T. Modi, R. K. Mishra, D. Giri, **B. P. Mandal** and S. Kumar, **Journal of Chemical Physics**, 139 165101 (2013).
90. **Various scattering properties of a new PT-symmetric non-Hermitian potential**, A. Ghatak, R. D. Ray Mandal, **B. P. Mandal**, **Annals of Physics** 336 540 (2013).
91. **Noncommutative Gauge Theories: Model for Hodge theory**, S. Upadhyay, **B. P. Mandal**, Int. J. Mod. Phys. A 28 1350122 (2013).
92. **Comparison of different approaches of finding the positive definite metric in pseudo-Hermitian theories**, A. Ghatak, **B. P. Mandal**, Commun. Theor. Phys. 59 533 (2013).
93. **Finite nilpotent BSRT transformation in Hamiltonian formulation**, S. K. Rai, & **B. P. Mandal** Int. J. of Theor. Phys. 52 , 3512 (2013).

94. **The Scattering amplitude for one parameter family of shape invariant potentials related to X_m Jacobi polynomials**, R. K. Yadav, A. Khare, **B. P. Mandal**, *Physics Letter B* **723**, 433 (2013).
95. **PT phase transition in higher-dimensional quantum systems**, **B. P. Mandal**, B. K. Mourya, R. K. Yadav, *Physics Letters A* **377**, 1043 (2013).
96. **The noncovariant gauges in 3-form theories**, S. Upadhyay, M. K. Dwivedi, **B. P. Mandal**, *Int. J. Mod. Phys. A* **28** 1350033 (2013) .
97. **Finite BRST Transformations for the Bagger-Lambert-Gustavasson Theory** M. Faizal, **B. P. Mandal**, S. Upadhyay, *Phys. Lett. B* **721**: 159, (2013).**CITATION: 60+**
98. **The Scattering amplitude for Newly found exactly solvable Potential**, R. K. Yadav, A. Khare, **B. P. Mandal**, *Annals of Physics* **331**, 313 (2013).

2012

99. **Spectral Singularity and deep multiple minima in reflectivity in non-Hermitian (complex) Ginocchio potential**, A. Ghatak, **B P Mandal** and Z. Ahmed, *J. Phys A : Math & Gen.* **45**, 465305 (2012).
100. **Spectral Singularity and Non-Hermitian PT symmetric extension of A_{N-1} type Calogero model without confining potential** **B. P. Mandal** & A. Ghatak.*J. Phys A : Math & Gen.* **45**, 444022 (2012).
101. **Finite BRST transformation and constrained systems** Sudhaker Upadhyay and **Bhabani Prasad Mandal**; arxiv/1207.6449 [*Annl of Physics* 327, 2885 (2012)]
102. **Entangled quantum state discrimination using Pseudo-Hermitian system** Ananya Ghatak & **B. P. Mandal** ; arxiv 1202.2413 *J. Phys A : Math & Gen.* **45**, 355301 (2012).
103. **Noncommutative Dirac oscillator in Magnetic field**, **Bhabani Prasad Mandal** and S. K. Rai.arXiv:1203.2714, *Phys. Lett. A* **376**, 2467 (2012)**CITATION: 61+**.

104. **BV formulation of higher form gauge theories in a superspace** Sudhaker Upadhyay and Bhabani Prasad Mandal; arxiv/1206.3662 **Eur. Phys. J. C** **72**, 2065 (2012).
105. **Finite Nilpotent Symmetry for Gauge Theories** Sudhaker Upadhyay and Bhabani Prasad Mandal; arxiv/1201.0084, **Eur. Phys. J. C** **72**, 2059 (2012).

2011

106. **The model for self-dual chiral bosons as a Hodge theory**, S. Upadhyay, & B. P. Mandal. **EPJC** **71**, 1759 (2011).
107. **Relating Gribov-Zwanziger theory to effective Yang-Mills theory** S. Upadhyay & B. P. Mandal, **Europhysics Lett.** **93**, 31001, (2011).
108. **Various forms of BRST Symmetry in Abelian 2-form gauge theory** Sumit K. Rai, & B. P. Mandal, **Mod. Phys.Lett. A** **25**, (2011).
109. **Off-shell nilpotent finite BRST/anti-BRST transformations** S. Upadhyay, Sumit K Rai & B. P. Mandal **Jour. Math. Phys.** **52**, 022301 (2011) .**CITATION: 68+**

2010

110. **Finite Nilpotent symmetry in Batalin-Vilkovisky formulation**, B. P. Mandal , S. K. Rai & S. Upadhyay. **Europhysics Lett.** **92**, 21001,2010.
111. **Generalized BRST Transformation in Abelian rank-2 antisymmetric tensor field theory** S. Upadhyay & B. P. Mandal **Mod. Phys.Lett. A** **25**, 3347-3362,(2010)
112. **Pseudo-Hermitian Interaction in Relativistic Quantum Mechanics.** B. P. Mandal & Saurabh Gupta, **Mod. Phys. Lett. A** **25** 1723-1732 (2010).
113. **New forms of BRST symmetry in rigid rotor** Sumit. K Rai & B. P. Mandal, **Mod. Phys. Lett. A** **25** , 2281-2288 (2010).

114. **Dirac Oscillator in an External Magnetic field** (B. P. Mandal & Shweta verma, **Phys. Lett. A** **374**, 1021-1023 (2010). **CITATION: 98+**

2009

115. **Absolute anticommutativity of the nilpotent symmetries in the Hamiltonian formalism: free Abelian 2-form gauge theory** R. P. Malik, B. P. Mandal, S. K. Rai (Bhu) **Int. J. Mod. Phys A** **24** 6157-6176 (2009).
116. **Relating the generating functionals in field/antifield formulation through finite field dependent BRST transformation** Sumit K. Rai & B. P. Mandal, **Eur. J. Phys. C** **63**, 323-330 (2009)
117. **New QES Hermitian as well as non-Hermitian PT invariant Potentials** A. Khare & B. P. Mandal **Pramana** **73**, 387, (2009).
118. **Nilpotent Symmetry Invariance In QED With Complex Scalar Fields: Augmented Superfield Formalism** R. P. Malik & B. P. Mandal, **Pramana** **72**, 505 (2009).
119. **Superfield approach to the nilpotent symmetry invariance in the non-Abelian 1-form gauge theory** (With R. P. Malik, BHU) arXiv:0709.2277, **Pramana** **72**, 805 (2009).

2008

120. **Delayed pulsar kicks from the emission of sterile neutrinos** With Alexander Kusenko(USA) & Alok Mukherjee, **Phys. Rev. D** **77** 123009, [2008]. **CITATION: 58+**

2007

121. **PT-Symmetric, Quasi-Exactly solvable matrix Hamiltonians** (with Y. Brihaye and Ancilla Nininahazwe [Belgium]) **Quant-ph/0701117**, **J. Phys. A: Math. Theor.** **40**, 13063 (2007) .

122. **QES systems, invariant spaces and polynomials recursions**, With Y. Brihaye, J. Ndimubandi, math-ph/0601004 IJMPA 22, 1423 (2007).

2006

123. **Augmented superfield approach to exact nilpotent symmetries for matter fields in non-Abelian theory**. (with R. P. Mallik), hep-th/0512334. Eur. Phys. Jour. C47 219 (2006).

2005

124. **Pseudo-Hermitian interaction between an oscillator and a spin half particle in the external magnetic field**. [Mod. Phys. Lett. A **20** 655-662 (2005). CITATION: 51+]
125. **Phase shift analysis of PT-symmetric and nonhermitian extension of A_n Calogero model without confining potential** (With B. Basu-Mallick & T. Bhattacharyya) [Mod.Phys.Lett. A **20** 543 (2005)].

2004

126. **Exciton in matrix formulation of Quantum Hall Effect** (With Y. Kobashi & A. Sugamoto), [Nucl. Phys. B679, 405-428,(2004)]
127. **Bound and Scattering states of extended Calogero model with an additional PT invariant interaction** (With B. Basu-Mallick, T. Bhattacharyya & A. Kundu) [Czechoslovak Journal of Phys. Vol. 54, 13 (2004)].

2002

128. **Application of finite field dependent BRST transformations to problems of the Coulomb gauge** (with S. D. Joglekar) [IJMPA,**17**, 1579, (2002)]CITATION: 71+

2001

129. **On an exactly solvable B_N type Calogero model with nonhermitian PT invariant interaction** (With B. Basu-Mallick) [Phys. Lett. A **284**, 231 (2001)].
CITATION: 60+

2000

130. **Quantum gauge symmetry from finite field dependent BRST transformations .** (With R. Banerjee) Phys. Lett. B **488**, 27(2000).
131. **A PT-Invariant Potential with complex QES eigenvalues.** (With A. Khare)
Phys. Lett. A **272**, 53 (2000). CITATION: 218+
132. **A superspace formulation of Abelian antisymmetric tensor gauge theory.** (With S. Deguchi, Nihon University) Mod. Phys. Lett. A **15** , 965 (2000).
133. **A superspace formulation of an ” asymptotic ” $OSp(3,1|2)$ invariance of Yang-Mills theories.** (With Satish D. Joglekar) J. Of Math. Phys. **41**, 4464 (2000).
134. **Path integral solution of non-central potential** Int. J. of Mod. Phys. A **15** 1225, (2000). Citattion: 71+ (quant-ph/9906028).

1998

135. **A number of quasi-exactly solvable N-body problems.** (With A. Khare) J. of Math. Phys. **39** , 5789 (1998) ;
136. **Anti-isospectral Transformations, Orthogonal Polynomials and Quasi-Exactly Solvable Problems.** (With A. Khare) J. of Math. Phys. **39**,3476 (1998);
137. **Do Quasi-Exactly Solvable Systems Always Correspond to Orthogonal Polynomials ?** (With A. Khare) Phys. Lett. A **239**, 197 (1998);

138. **D-brane interaction in the type IIB Matrix Model.** (With Subir Mukhopadhyay) Phys. Lett. B **419**, 62 (1998); (hep-th/9709098).

1997

139. **WT identities for proper vertices and renormalization in a superspace formulation of gauge theories** (With Satish D. Joglekar) Phys. Rev. D **55** 5038(1997). (hep-th 9606024)
140. **Local BRS transformations and $OSp(3, 1|2)$ symmetry of Yang-Mills theories** (With Satish D. Joglekar) (Z. Phys. C, **74** 172(1997).

1996

141. **A superspace formulation of BRS/ Anti-BRS symmetric Yang-Mills Effective action** (With Satish D. Joglekar) Z. Phys. C, **70**, 673,(1996))

1995

142. **Erratum: WT identities of gauge theories from broken $OSp(3, 1|2)$ symmetry in a superspace formulation** S D Joglekar, B P Mandal, Phys. Rev. D **51**(4), 2030, (1995).
143. **Superspace formulation of Yang-Mills theories II : Inclusion of gauge invariant operators and scalars** (With Satish D. Joglekar) Phys. Rev. D **52**,7129 (1995)
144. **Finite field dependent BRS transformations** (with Satish D. Joglekar) Phys. Rev. D **51**,1919,(1995) **CITATION: 142+**

1994

145. **Renormalization in a superspace formulation of gauge theories** (With Satish D. Joglekar) Phys. Rev. D **49**,5617 (1994)

146. **WT identities of gauge theories from broken $\text{Osp}(3,1 | 2)$ symmetry in a superspace formulation** (With Satish D. Joglekar) Phys. Rev. D **49** , 5382 (1994).

Conference Papers (**Not all are listed here**)

1. **BRST quantization on Torus Knot** Vipul Kumar Pandey & Bhabani Prasad Mandal, DEA 2016, EPJC?
2. **Relating Gribov-Zwanziger theory and Yang-Mills theory in Batalin-Vilkovisky formalism** Bhabani Prasad Mandal & Sudhaker Upadhyaya, AIP Conf. Proc. **1444**, 213 (2012)
3. **Skew Quadrupole in sextupole magnets for Indus2** (With Gautam Sinha, S. P. Mhaskar, Gurnam Singh).
4. **A new QES non-Hermitian PT invariant potential** (with A. Khare) International conference on “ Non-Hermitian Hamiltonian in Quantum Physics” BARC, Mumbai-2009.
5. **Relativistic Landau levels.** Bhabani Prasad Mandal & Shweta Verma, **Proceedings of the XVIII DAE-BRNS HEP symposium, 257-261, 2009.**
6. **Finite field dependent BRST in field/antifield formulation** Sumit K. Rai & Bhabani Prasad Mandal, **Proceedings of the XVIII DAE-BRNS HEP symposium, 374-377, 2009.**

Unpublished Papers

1. Role of conditional shape invariance symmetry property to obtain the eigenspectrum of the generalised polynomial potential with a Coulomb term Sudesna Bera, Rajesh Kumar Yadav, Barnali Chakrabarti, Bhabani Prasad Mandal
2. Hartman-Fletcher effect for array of complex barriers, A. Ghatak, M. Hasan, Bhabani Prasad Mandal, arXiv: 1505.03163.
3. **Effect of nonzero u, d, s quark masses on the bulk viscosity in a realistic strange star**, M. Sinha, R.D.R. Mandal & **B. P. Mandal**, (Unpublished).

4. A PT invariant Non-Hermitian potential with real QES eigenvalues. A Khare & B P Mandal Quant-ph/0004019.

List of invited talks delivered (66+)

2025

1. Hermitian Topology from Non-Hermitian Knots, Yukawa Institute of Theoretical Physics, Kyoto University, December 12, 2025.
2. Consistent Quantum Formulation of NH systems: Some applications, August 13, 2025, Sophia University, Tokyo Japan
3. Introduction to complex quantum theories, August 12, 2025, Nihon University, Funabasi-Campus, Tokyo, Japan.
4. Emergence of Hermitian Topology from Non-Hermitian Knots; ISSO-IIS Joint Symposium on Physics of Open Systems: Resonance, Symmetry and Topology (POS-RST 2025), Tokyo University, August 4-8, 2025.

2024

5. Non-Hermitian Quantum Mechanics, IISc Bangalore, Dec 30, 2024
6. Helmann Feynman theorem and Non-Hermitian quantum mechanics, PHHQP21, Chania, Greece Sept 22-27, 2024
7. Making sense with non-Hermitian Hamiltonian, IIT-Delhi, Sept 20, 2024.
8. Delivered a Set of 12 lectures on Basic Physics in the "Science Academy's summer school for differently abled students in physics. during June 10 -29, 2024

2023

9. PT phase transitions : Applications, PHHQP20, Istanbul, Turkey, July 31 to August 5, 2023.

10. Finite field dependent BRST and its applications, (Invited Talk) Sept 15, 2023
(delivered Online) Departamento de Ciências Exatas - DCEX Universidade Estadual de Santa Cruz - UESC Bahia, Brazil

2022

11. Current Advances and Research Opportunities in Quantum World June 13, 2022.
Midnapore City college, West Bengal (online)
12. Supersymmetry and Shape Invariance of exceptional orthogonal polynomials, September 6, 2022, International conference ,Analytic and algebraic methods in physics XIX (2022), Prague.
13. Generalized BRST Transformation, September 8,2022, Hyderabad University
14. Various extension of Quantum Theories, October 8 , 2022, Kumaun University, Nainital.
15. Gravitational wave that rock the world, October 10, 2022, Graphic Era Hill University, Bhimtal

2021

16. The rational extension of quantum mechanical systems, AAMP17, Sept 1-3, 2021.
Prague.
17. Introduction to PT phase transition, QIQT June14 to July 14 Talk presented on10th July, 2021 IISER-Kolkata. (Online)
18. Deconfinement to confinement as PT phase transition, March 23, Non-Hermitian conference, March 22-26, 2021, ICTS , Bangalore. (Online).

2019-20

19. Extended quantum theories , July 26, in a webinar , ”Contemporary trend in physics” at Dr Meghnad Saha college, West Bengal.

20. Gravitational Wave: wave that rocked the world: Sept 8, 2020, in Faculty Development Program, Recent Advancements in Physics, Sept 4-8, 2020 RCC Institute of information Technology Kolkata.
21. PT phase transition: QM to QFT, October 8, 2020, in the International conference, Virtual PHHQP.

2018

22. Complex quantum mechanics, RRI, Bangalore, June 15, 2018.
23. Fractional Quantum Mechanics, ICTS, Bangalore, June 5, 2018
24. PT symmetric non-Hermitian quantum mechanics, IIT-Bombay, April 19, 2018
25. Finite field dependent BRST transformations: Applications, KU, Nainital, March 27-28

2017

26. QES solutions of non-linear systems, NI, Goa, Aug 7-8, 2017.
27. Rational extension of PT symmetric Non-Hermitian potentials, PHHQP-17, Bad Honnef, Germany, May 14-19, 2017.
28. Complex quantum theories, March 14, 2017, Berhampur University, Orissa.
29. FFBRST and Abelian projection: March 10, 2017, Institute of Physics, Bhubaneswar.

2016

30. Abelian dominance in Lorenz gauge. Dec 21, 2016, IIT-Bombay.
31. Wave that rocked the universe, IIT-BHU, ISHAN program on Dec 17, 2016
32. Exceptional orthogonal polynomials and their applications to quantum theories, RAMSA-2016, Dec 10, IIIT-Noida.
33. Theories with non-Hermitian Hamiltonian, Dec 7, 2016, Shiv Nadar University, Noida.
34. Abelian project in Lorenz gauge? Int. Conf. in Recent Trends in Field theory-5, Nov. 8, 2016, BHU.

35. Extension of BRST formulation and its applications, Under CAS program, Kumaun University, Oct 27, 2016.
36. Consistent quantum theories with non-Hermitian systems, Under CAS program , Kumaun University, Oct 26, 2016
37. Quantum theory and some recent excitements, [Inspire lecture](#) for 10+2 students, Kumaun University, Oct. 26, 2016. Nainital.
38. Broadband CPA, PT symmetric conference at YITP, Kyoto University, Kyoto, Japan, Aug 12, 2016.
39. Exceptional orthogonal Polynomials and QES extension of Calogero Model, Institute of Quantum Science, Nihon University, Tokyo, Japan, Aug 3, 2016.
40. Generalized BRST transformation, SINP, Kolkata, June 6, 2016
41. Introduction to complex quantum theories, TIFR, Mumbai, May 5, 2016
42. Introduction to Non-Hermitian Quantum Theories, Ochanomizu University, Tokyo Japan, January 14, 2016
43. Generalized BRST transformation: Applications, Kinki University, Osaka Japan, January 13, 2016
44. Finite field dependent BRST transformation, Masakawa Institute , Kyoto Sangyo University, Kyoto, Japan January 12, 2016.
45. Introduction to complex quantum theories, Bio Nano Electronics Research Center, Toyo University, Kawagoe ,Saitama Japan January 6, 2016.

2015

46. Introduction to non-hermitian quantum theories, Institute of Industrial Science, Tokyo University , Japan, December 10, 2015
47. Non-Hermitian quantum theories, Institute of Quantum Science, Nihon University, Tokyo, Japan, December 9, 2015.
48. Finite BRST: An overview, QFT conference, IOP, Bhubaneswar, July 2015

- 49. Finite field dependent BRST transformations and its applications, TIFR April, 2015
- 50. Set of two lecture on , PT symmetric Quantum Mechanics? in the workshop, RDQT-2015, Phys. Dept, BHU, Feb 24-Mar 1 , 2015

2014

- 51. Set of two lectures on Feynman diagram calculations? in the winter school in HEP, Physics Dept, BHU Dec 2014.
- 52. Mixed BRST, in International conference, Recent Trends in QFT, Dept. of Phys and DST CIMS , BHU Nov, 2014
- 53. PT phase transition in Graphene, JSPS annual meeting Chennai, Aug 7-8, 2014.

2013

- 54. Generalized BRST transformation and its applications, IMS, Kyoto University, Kyoto, Japan. July 3, 2013
- 55. Finite Field dependent BRST transformations and its applications, Ochanomizu University, Tokyo Japan , 28,June 2013.
- 56. May 28, 2013, RIKEN, Tokyo, Japan Generalized BRST Transformation
- 57. A set of three lectures at IQS, Nihon university, during May 17 -June 16, 2013 (Japan trip)

2012

- 58. **Finite Nilpotent symmetry**, International conference on NTFT, DST-CIMS, BHU, On 25th November, 2012.
- 59. **Finite field dependent BRST Transformation**, Dept of Physics, Helsinki University, Finland, Sept.04, 2012.
- 60. **Complex Classical Mechanics for a QES systems**, International conference on PHHQP12, APC, Paris, August 27, 2012.
- 61. **Complex Quantum Theories**, PG Dept of Physics, SKM University, Dumka, March 21, 2012.

62. **Complex quantum theories**, Refresher's course in Physical Sciences, Academic Staff College, BHU, Varanasi, February, 09, 2012.

2011

63. **Gribov-Zwanziger theory to effective Yang Mills theory**, International Conference in QCD, IIT-Bombay, August 30 2011.
64. **Finite Nilpotent Symmetry**, FTRTA-2011, IISER Kolkata, August 23, 2011.
65. **Spectral Singularity in Non-Hermitian extension of Calogero model**, International conference on PHHQP11, MPIPKS, Dresden, Germany on 21 June, 2011.
66. **Generalized BRST symmetry**, Albert Einstein Institute for Gravitational physics, Golm, Potsdam, Germany, on June, 14, 2011.
67. **Pseudo-Hermitian Quantum mechanics: Recent developments**, Workshop in recent trends in particle and nuclear physics, BHU, Varanasi, on March, 11, 2011.
68. **Finite Field Dependent BRST transformation and Gribov-Zwanziger theory**, International conference in QFT-2011, IISER-Pune, February 26, 2011
69. **Finite BRS transformation: An overview**, Conference in memory of S. D. Joglekar, IIT-Kanpur, February 18, 2011.
70. **Finite Nilpotent Symmetry in Batalin-Vilkovisky formulation**, International conference on Recent Trends in Field theory, BHU, Varanasi, February 9, 2011.

2010

71. **Finite nilpotent symmetry in BV formulation**, LNMIIT, Jaipur, December 13-18, 2010, XIX DAE Symposium in HEP.
72. **Equivalence between metric operators in different approaches**, December 13-18, 2010, XIX DAE Symposium in HEP.

Visited Abroad for Professional Works

- December 1, 2025 to January 25, 2026, YITP, Kyoto University, Visiting Fellow.

- August 2-15, 2025, Tokyo, Japan, POS-RST-2025, Invited talk and Chair a Technical Session. Also delivered invited talks at Nihon University and Sophia University , JAPAN.
- Sept 21 to 27, 2024, Chania, Greece, PHHQP-21, Invited talk and Chair a Technical Session.
- July 30 to August 5, 2023, Istanbul, PHHQP20, Invited talk and Chair a Session.
- May 14-20, 2017 International Conference in PT symmetry, Bad Honnef, Germany
- Aug 8 - 13, 2016, YITP, Kyoto University, Kyoto, Japan.
- July 31 to Aug 7, 2016 Institute of Quantum Science, Nihon University, Tokyo Japan.
- December 3 2015 to January 17, 2016, JSPS Bridge Fellowship, Nihon University, Tokyo Japan.
- June 26 July 3, 2013 Institute of Mathematical Science, Kyoto University, Kyoto Japan.
- June 16 to June 25, 2013, Ochanomizu University, Tokyo, Japan
- May 17 to June June 16, 2013 Institute of Quantum Science, Nihon University, Tokyo Japan
- **Department of Physics, Helsinki University, Finland Sept 01 to 15, 2012. For research Collaboration.**
- **APC, Paris During August 26 -31, 2012, To attend an international conference on**
- **MPIPKS, Dresden, GERMANY.** From June 15 -26, 2011. To participate and give an invited talk in the international conference in *Quantum Physics with Non-Hermitian operators*.
- **Max Planck Institute for gravitational physics, Golm, Potsdam, GERMANY .** From June 01 to June 15, 2011, For research Collaboration.

- **Ochanomizu University, Tokyo, JAPAN.** From July 25, 2001 to August 2002. [JSPS postdoctoral position]
- **Atomic Energy Research Institute, Nihon University, Tokyo, JAPAN.** Form October 10, 1998 to November 11, 1998. For Research collaborations.
- **ICTP, Trieste, ITALY,** From June 10, 1996 to June 28, 1996. To attend Summer School in HEP and for research collaborations.
- **CERN, Geneva, SWITZERLAND,** From June 29 ,1996 to July 07,1996. For re-search collaborations.

Research Guidance

PhD Thesis :16 (Completed 11, Ongoing 5)

Master Thesis: 60+

List of PhD Thesis

Working (5)

1. Mr Tejas, Jaypee University of Information Technology, Solan, Himanchal Pradesh (2025) (co-Supervisor)
2. Kumar Sambhav Upadhayay (2023)
3. Mr Gourav Hojang (Joined 2023)
4. Ms Gargi Das (joined 2022)
5. Sudhasu Sekhar (2022) (Co-supervisor)

6. Mr krishnanand Mishra (Joined Sept 2016) left in 2018 due to family problem

Awarded (11), Submitted (0)

7. Supersymmetry and Shape Invariance of Exceptional Orthogonal Polynomials and Rational Extension of Various Quantum Mechanical Systems, Mr Satish Yadav, (awarded 2024), Assistant Professor Satish Chandra College, UP.
8. Fractals, new features in non-Hermitian and space fractional quantum mechanics, Mr. Vaibhov Narayan Singh (Awarded 2024)., Assistant Professor, Private University.
9. Study of Topological Properties of Various Quantum Field Theoretic Models and their Applications Mr Aditya Dwivedi, (Awarded 2024), Postdoc, IIT-Bombay.
10. Scattering in non-Hermitian Quantum Mechanics: New Features, Md Hasan, (Awarded March 2022), Program Manager, ISRO, Bangalore.

11. Various aspects of BRST transformations and their implications in gauge field theories. (Vipul Kumar Pandey) (Awarded September 2019), Assistant Professor, Chandigarh University.
12. Symmetries, Exceptional Polynomials and Various Exactly Solvable Potentials, Nisha Kumari (Awarded May 2018), Assistant Professor, Tilka Manjhi Bhagalpur University, Bihar.
13. Complex extension of quantum theories and PT phase transitions (Brijesh K Mourya) (awarded January 2018) School Teacher, UP)
14. Complex extension of quantum theories and applications (Ananya Ghatak (June 2015), Postdoc, Europe.
15. Symmetries and their consequences in non-Hermitian systems Rajesh Kumar Yadav (May 2015). Assistant Professor, SKM University, Dumka.
16. Finite Field Dependent BRST transformations and its applications to gauge theories- Sudhaker Upadhyay, (August, 2012): Assistant Professor, Magadh University.
17. Generalized BRST transformations and its applications to gauge theories- Sumit Kumar Rai (May, 2012): Assistant Professor, Ara University.