

**FACULTY PROFILE****BASIC PROFILE****DR. PRADIPTA PANCHADHYAYEE****Assistant Professor (Stage III)****Dept. of Physics (UG & PG)***pp@pkcollegecontai.ac.in; ppcontai@gmail.com*

Contact No: (+91) - 9476161100

Academic Qualification: M.Sc., Ph.D.

**SERVICE HISTORY**

Year of Joining	:	2001
Experience in Teaching	:	UG [Gen: 17 yrs; Honours: 17 yrs]; PG: 11 yrs
Area of Teaching: Mathematical Physics, Electrodynamics, Quantum Mechanics, Solid State Physics		
Area of Specialization: Solid State Physics		
Participation in Administrative activities:		
Head of the Department (from 2008 - 11)		
PG Coordinator (from 2006-09, 2014-16 and Jan, 2017 -)		
Member, Governing Body (from 2014 -)		
Member, Academic Subcommittee, P. K. College, Contai (from 2014-15 and Jan, 2017 -)		
Board of Studies, UG, Vidyasagar University (from 2012-13 – 2016-17)		
Board of Studies, PG, P. K. College, Contai (from 2015-16)		
Member, Library Committee (2010-2014)		
Member, IQAC (from 2010-11)		
Member, RUSA Monitoring Cell (from 2010-11 – 2016-17)		
Member, UGC Affairs Committee (from 2010 -)		
Member, Building Subcommittee (from 2014-)		
Convener, Technical Committee (Online Admission) (from 2014-15)		

RESEARCH PROFILE**Area of Research Interest: Quantum Optics, Guided Wave Optics and Tunneling in Semiconductor Devices****Research Experience** : **8 years** (Post-doctoral research)**Conference/Seminar/Workshop Organised:****Organising Secretary in UGC-sponsored National Seminar** on '50 years of laser: Promises & Challenges' organized by Deptt. of Physics, P. K. College, Contai; Date: 8-9.01.2012.**Organising Secretary in UGC-sponsored National Seminar** on 'Recent Trends in Cosmology & Future Challenges (RTCFC 2015)' organized by Deptt. of Physics, P. K. College, Contai; date: 3-4.12.2015.**Fellowship / Awards:**

- Gold Medal (University Blue), Vidyasagar University, West Bengal
- Gold Medal (M. Sc. in Physics), Vidyasagar University, West Bengal
- Gold Medal (B. Sc. Hons. in Physics) Vidyasagar University, West Bengal
- National Scholarship in 10+2 level under W.B.C.H.S.E.
- National Scholarship in 10 under W.B.B.S.E.



Projects ongoing / completed:			
Title	Funding Agency	Year	Amount (Rs.)
Study of Resonant Tunneling Phenomenon in Electrically Biased Generalized Thue-Morse Semiconductor Superlattices	UGC	2009-11	71,000
Optical analogue of various quantum effects in optical waveguide systems: classical and quantum approaches	UGC	2014-16	3,40,000
Involvement in other research activities:			
Supervisor: Doctoral Student: 1 (thesis submitted)			
Reviewer:			
<ul style="list-style-type: none"> • Physica E: Low-dimensional Systems and Nanostructures - Elsevier • Journal of Optical Society of America B - Journal of Optical Society of America • Physics Letters A – Elsevier • Journal of Applied Physics – American Institute of Physics • Superlattices & Microstructures – Elsevier • Materials Science in Semiconductor Processing – Elsevier • Optical Engineering – SPIE • Canadian Journal of Physics – Canadian Science Publishing (NRC Research Press) • Indian J Pure & Applied Physics – NISCAIR • International Journal of Modern Physics and Application, American Journal of Science and Technology – AASCIT • IEEE International Nano-Electronics Conference at Taiwan, 2011 • 3rd International Symposium on Next-Generation Electronics (ISNE 2014). • Current Nanoscience – Bentham Science Publishers. • Pramana – Indian Academy of Sciences 			
Involvement in Academic/ Professional Organizations:			
<ul style="list-style-type: none"> • Life Member - Indian Association of Physics Teachers (IAPT) • Life Member - Indian Physical Society (IPS) • Life Member – Optical Society of India (OSI) • Life Member: Indian Laser Association (ILA) 			
Editorial Board Member:			
<ul style="list-style-type: none"> • International J Physics (International Organization of Scientific Research & Development) • Bijnan Banhi (ISSN: 2348-6562) • Bijnan Trisha (ISSN: 2395–3004) • Pratiphalan (ISSN: 2394-9856) 			
Publications:			
Books :			
<i>Tunneling in Electrically Biased Semiconductor Multibarrier Systems: Resonant Tunneling & Its Time-dependent Aspects</i> – (Co-authored by Prof. P. K. Mahapatra) - Lambert Academic Publishing, Germany, 2012; ISBN: 978-3-8484-2208-1			
Edited Books:			
<i>COSMOQUEST</i> – An Edited Volume (Co-edited by G. Manna) published as a Post Conference Proceedings on the 2-Day National Seminar on <i>Recent Trends in Cosmology & Future Challenges (RTCFC 2015)</i>: ISBN - 978-81-87687-61-4			
Journals: (A) International Journals:			
<ol style="list-style-type: none"> 1. P. K. Mahapatra, P. Panchadhyayee, and C. L. Roy: <i>Band structure of realistic model for semiconductor superlattices</i>, Indian J. of Pure & Appl. Phys. 39, 296-307 (2001) 2. Arif Khan, S. Sinha, and P. Panchadhyayee: <i>Density of states in an electrically biased quantum well</i>, Pramana 69, 651-659 (2007) 3. P. K. Mahapatra, S. Sinha, and P. Panchadhyayee: <i>Role of staircase potential in the energy spectrum of a periodic system</i>, Physica B 403, 3365-3373 (2008) 4. P. K. Mahapatra, P. Panchadhyayee, S. P. Bhattacharya, and A. Khan: <i>Resonant tunneling in electrically</i> 			



- biased multibarrier systems*, Physica B 403, 2780-2788 (2008)
5. **P. Panchadhyayee**, R. Biswas, A. Khan, and P. K. Mahapatra: *Current density in generalized Fibonacci superlattices under a uniform electric field*, J. Phys. Condens. Matt. 20, 275243(7pp) (2008)
 6. **P. Panchadhyayee**, R. Biswas, A. Khan, and P. K. Mahapatra: *Electric-field-induced resonant tunneling lifetime in semiconductor multibarrier systems*, J. Appl. Phys. 104, 084517(4pp) (2008)
 7. **P. Panchadhyayee**, R. Biswas, C. Sinha, and P. K. Mahapatra: *The effect of quasi-periodicity on the resonant tunneling lifetimes of states in electrically biased semiconductor superlattices*, J. Phys. Condens. Matt. 20, 445229(8pp) (2008)
 8. R. Biswas, C. Sinha, **P. Panchadhyayee**, and P. K. Mahapatra: *Tunneling escape rate in dc-biased periodic multibarrier semiconductor heterostructures*, Physica B 405, 3409-3411 (2010)
 9. S. Mukhopadhyay, **P. Panchadhyayee**, R. Biswas, and C. Sinha: *Influence of Al concentration on the current density in GaAs-Al_cGa_{1-c}As Generalized Thue-Morse superlattices*, Eur. Phys. J: B 80, 477-483 (2011)
 10. I. Bayal, **P. Panchadhyayee**, B. K. Dutta and P. K. Mahapatra: *Optical trapping with modified exponential decay in optical waveguides via dressed continuum*, J. Mod. Opt. 59(3), 226-234 (2012)
 11. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Phase control of absorption, dispersion and gain of weak signal field in erbium doped optical fiber*, J. Opt. (Springer) 41(4), 235-242 (2012)
 12. B. K. Dutta, **P. Panchadhyayee**, P. K. Mahapatra: *Phase coherence and Rabi frequency induced ultranarrow spectral line*, Phys. Lett. A 376, 3439–3444 (2012)
 13. B. K. Dutta, **P. Panchadhyayee**, P. K. Mahapatra: *Precise localization of a two-level atom by the superposition of two standing-wave fields*, J. Opt. Soc. Am. B 29 (12), 3299-3306 (2012)
 14. **P. Panchadhyayee**, B. K. Dutta, P. K. Mahapatra: *Decay interference induced high precision localization in a multilevel atom via controlled spontaneous emission*, J. Mod. Opt. 59(19), 1705-1716 (2012)
 15. B. K. Dutta, **P. Panchadhyayee**, P. K. Mahapatra: *Coherent control of localization of a three-level atom by symmetric and asymmetric superpositions of two standing-wave fields*, Laser Phys. 23(4), 045201 (2013)
 16. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Modulation of spatial propagation dynamics in a three-core linear directional coupler*, Opt. Engg. 52(5), 054003 (2013)
 17. **P. Panchadhyayee**: *Efficient band-pass and stop-band filtering by GaAs-Al_cGa_{1-c}As generalized Thue-Morse multibarrier systems*, Phil. Mag. 93(20), 2654–2661 (2013)
 18. **P. Panchadhyayee**: *Role of strongly modulated coherence in transient evolution dynamics of probe absorption in a three-level atomic system*, Opt. Commun. 309(C), 95-102 (2013)
 19. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Variable-coupling-induced optical trapping in optical waveguides via dressed continuum*, J. Mod. Opt. 60(12), 1006-1014 (2013)
 20. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Optical analogue of double Fano resonance via dressed twin continua*, J. Opt. Soc. Am. B 30 (12), 3202-3209 (2013)
 21. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Simulation of coherently controlled population dynamics of a three-level atomic system in a three-waveguide directional coupler: An opto-quantum analogy*, Opt. Commun. 347(C), 50-58 (2015).
 22. I. Bayal, **P. Panchadhyayee**, and P. K. Mahapatra: *Optical analogue of Rabi oscillations in optical waveguides via structured continuum*, J. Mod. Opt. 62(17), 1412-1418 (2015).
 23. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Multiphoton-process-induced coherence effects in a dissipative quantum system*, J. Opt. Soc. Am. B 32 (10), 2178-2189 (2015).
 24. R. Pradhan, A. Dhara, **P. Panchadhyayee**, and D. Syam, *Determination of Young's modulus by studying the flexural vibrations of a bar: experimental and theoretical approaches*, Euro. J. Phys 37(1), 015001 (2016).



25. **P. Panchadhyayee** & Nityananda Das, *Classical analogues of a quantum system in spatial and temporal domains: A probability amplitude approach*, Cogent Physics (Taylor & Francis) 3, 1134263 (2016).
26. B. K. Dutta & **P. Panchadhyayee**, *Modification and control of coherence effects in the spontaneous emission spectrum of a three-level atom at weak field regime*, Laser Physics 26, 095202 (2016)
27. **P. Panchadhyayee**, B. K. Dutta, Nityananda Das and P. K. Mahapatra, *Resonance Fluorescence microscopy via three-dimensional atom localization*, Quantum Information Processing (published Online, December 15, 2017)

(B) National Journals:

1. S. Das, **P. Panchadhyayee**, and K. K. Dey: *An Empirical Formula for Wall Effect in Stokes' Viscosity Experiment*, IAPT Bulletin, 246-251, August (2007)
2. **P. Panchadhyayee**: *Is the Abraham-Minkowski Controversy resolved finally?*, Science and Culture 79 (9-10), 387-390 (2013)
3. **P. Panchadhyayee**: *Evolution of coupling induced degeneracy in a dual periodic optical superlattice*, J. K. Times, VIII, 52-63 (2014)

(C) Seminar / Conference Publications:

1. I. Bayal, B. K. Dutta, **P. Panchadhyayee**, and P. K. Mahapatra: *Phase control of absorption, dispersion and gain of weak signal field in erbium doped optical fiber*, International Conference on Trends in Optics and Photonics (IConTOP), December 7 - 9, 2011.
2. **P. Panchadhyayee**: *Electronics in the 21st century: An overview*, State-level Seminar on 'Electronics for the 21st century', Dept. of Electronics, Vidyasagar University, March 23, 2009.
3. **P. Panchadhyayee**: *Linkage of Earth's biodiversity and solar system's orbit in Milky way galaxy*, National-level Seminar on 'Biodiversity and its impact', Dept. of Botany, P.K. College, Contai, March 16-17, 2011.
4. **P. Panchadhyayee**: *Writing of Hindu Chemistry: A brief overview*, State-level Seminar on 'Recent trends in separation of bio-molecules (Part B – Birth of Chemical Science and Acharya P. C. Roy)', Dept. of Chemistry, P.K. College, Contai, April 12, 2011.
5. **P. Panchadhyayee**: *Where are we in the city of light? – In relevance to 50 years of LASER*, National-level Seminar on '50 Years of LASER – Promises and Challenges', Dept. of Physics, P.K. College, Contai, Jan 08-09, 2012.
6. **P. Panchadhyayee**: *Tunneling related issues in case of semiconductor multibarrier nanostructures under uniform electric field*, State-level Seminar on Recent advances in materials science & technology, Dept. of Physics, Tamralipta Mahavidyalaya, 20-21 January 2012.

OTHER INVOLVEMENTS

Scholarly organizations:

- President, Egra Organisation for the Cultivation of Science (OCS)
- Vice President, Contai Science Academy (CSA)
- Mentor, Atal Tinkering Laboratory (ATL), Contai High School, Purba Medinipur

Social organizations:

- Member of Executive Body of *Jagaran – The Rising*, a NGO working for mainly students
- Member, LIONS Club of Contai

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