

Dr. Sutanu Kumar Chandra

Associate Professor in Physics
Department of Physics, Katwa College Katwa,
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Education

Ph.D. in Physics from The University of Burdwan, Burdwan, in 2016
M.Sc. in Physics and Techno Physics, from Vidyasagar University, Midnapore, in 1996
B. Sc. (Hons) in Physics, from Midnapore College under Vidyasagar University, in 1994

Fellowships

Qualified in NET (JRF - CSIR)

Positions Held

Associate Professor in Physics, Department of Physics, Katwa College, from 2016 - present

Assistant Professor in Physics, Department of Physics, Katwa College, from 2006 - 2016.

Lecturer in Physics, Department of Physics, Katwa College, from 2002 - 2006.

Research Experience

Thesis Title: *Some analytical studies on the method of implementation of all-optical phase encoded logic system.*

Supervisor: Prof. Souranghsu Mukhopadhyay, The University of Burdwan

List of Publications (in International Journal)

1. Chandra, Sutanu Kumar and Biswas, Subhendu. "Quaternary Bit-Swap Logic with QPSK Signal Using Four Wave Mixing " *Journal of Optical Communications*, vol. 45, no. 1, 2024, pp. 27-34. <https://doi.org/10.1515/joc-2019-0158>
2. S.K.Chandra*, S.Biswas and S.Mukhopadhyay, "Phase encoded all-optical reconfigurable integrated multilogic unit using phase information processing of four wave mixing in semiconductor optical amplifier", *IET-Optoelectronics*, 10(1), 1-6, (2016). (<http://digital-library.theiet.org/content/journals/10.1049/iet-opt.2014.0066>)

3. S.K.Chandra* and S.Mukhopadhyay, “All-optical one-bit latch with phase encoded data using phase information processing through four wave mixing in semiconductor optical amplifier”, Journal of Optics (Springer), 45(1), 11-15,(2016).(<https://link.springer.com/article/10.1007%2Fs12596-016-0320-y>)
4. S.K.Chandra*,P.P.Sarkar, S.Biswas and S.Mukhopadhyay, “All-optical phase encoded 4-to-1 phase multiplexer using four wave mixing in semiconductor optical amplifier”, Optik-International Journal of Light and Electron Optics, 125(23), 6953-57, (2014).(<https://www.sciencedirect.com/science/article/pii/S0030402614010286>)
5. S.K.Chandra, “All-optical single module phase encoded half-adder and half-subtractor exploiting four wave mixing in semiconductor optical amplifier”, Journal of Electronics and Communication Engineering, Vol-6(2), 67-71, (2013).(<http://www.iosrjournals.org/iosr-jece/papers/Vol6-Issue2/No626771.pdf>)
6. S.K.Chandra, “All-optical phase encoded NOR logic gate implementation by four wave mixing in semiconductor optical amplifier”, IJAEEE, Vol-2(3), 60-63, (2013).(<http://journals.theired.org/ijaeee.html>)
7. S. K. Chandra* and S. Mukhopadhyay, “An all-optical approach of implementing a different kind of phase encoded XOR and XNOR logic operations with the help of four wave mixing in SOA”, Optik-International Journal of Light and Electron Optics,124(6),505-507(2013).(<https://www.sciencedirect.com/science/article/pii/S0030402612000587?via%3Dihub>)
8. S. K. Chandra* and S. Mukhopadhyay, “All optical alternative approach of conducting NAND and NOR logic gates with phase encoding principle”, Optik-International Journal for Light and Electron optics, 123 (9), 1022-1025 (2012).(<https://www.sciencedirect.com/science/article/pii/S0030402611003779>)

List of Publications (in Conference Proceedings)

1. S. K. Chandra* and S. Mukhopadhyay, “An all optical approach of utilizing four wave mixing for developing an all-optical XOR logic operation with phase encoding mechanism”, Presented and published in the proceedings of the International Conference on Optics and Photonics (IConTOP-2009), organized by Dept. of Applied Optics and Photonics, Calcutta University of Calcutta, Kolkata.
2. S.K.Chandra* and S. Mukhopadhyay, “A new method of phase encoded all-optical NAND logic gate by semiconductor optical amplifier”, Presented in the Second International Conference on Computing and Systems, (ICCS-2013), Organised by Dept. of Computer Science, B.U, Bardhaman and IEEE Computer Society (Kolkata Section), the proceedings published in McGraw Hill Education (India) Private Ltd. (ISBN-13: 978-9-35-134273-1, ISBN-10: 9-35-134273-5).
3. S.K.Chandra* and S. Mukhopadhyay, “All-optical phase encoded logic gates with the help of three wave supported four wave mixing in semiconductor optical

amplifier-A new proposal”, presented and published in the proceedings of National level Seminar on “Modern Physics: Some aspects at a Glance” - (2013), Organised by SGB College, Bagati, Hooghly and Dept. of Physics, B.U., Burdwan, Published by Levant (ISBN: 978-93-80663-98-2).

4. S.K.Chandra, “*All-optical phase encoded NOR logic gate implementation by four wave mixing in semiconductor optical amplifier*”, presented and published in the Second International Conference on Advances in Electronics, Electrical and Computer Engineering – (EEC-13), Organised by Uttarakhand Technical University & SCE, Dehradun and IRED. (ISBN: 978-981-07-6935-2).
5. S.K.Chandra*and S. Mukhopadhyay, “*Phase encoded all-optical one bit latch using four wave mixing in semiconductor optical amplifier* ”, Presented and published in the proceedings of International Conference of optics and optoelectronics, Optical society of India, IRDE, Dehradun, 5th to 8th March 2014.

Seminar/Conferences attended and papers presented

1. *International Conference of Optics and Photonics (IConTOP- 2009)*, organized by Department of Applied Optics and Photonics, University of Calcutta, Kolkata, WB.
2. *International Conference on Radiation Physics and its Applications (ICRPA 2010)*, organised by Dept of Physics, The University of Burdwan, Purba Bardhaman, WB.
3. *Recent Trends in Communication Technology (RTCT 2011)*, organized jointly by IETE Burdwan Sub-Center and Dept. of Physics, The University of Burdwan.
4. *State Level Seminar on Trends in Astronomy, Astrophysics and Cosmology*, organised by Dept. of Physics, Kalna College in collaboration with the Dept. of Physics, The University of Burdwan.
5. *Recent Trends in Optoelectronics*, organised by S.S.College, Jiagan, Murshidabad and Dumkal College, Dumkal, Murshidabad (2012).
6. *Second International Conference on Computing and Systems*, (ICCS-2013), organised by Dept. of Computer Science, B.U, Bardhaman and IEEE Computer Society.
7. *National level Seminar on “Modern Physics: Some aspects at a Glance - (2013)*, organised by SGB College, Bagati, Hooghly and Dept. of Physics, B.U., Burdwan.
8. *Second International Conference on Advances in Electronics, Electrical and Computer Engineering (EEC-13)*, organized by Uttarakhand Technical University & Shivalik College of Engineering, Dehradun.
9. *International Conference of optics and optoelectronics (ICOL-2014)(XXXVIII Symposium of Optical Society of India)*, organised by Instrument Research and Development Establishment (IRDE) under DRDO, Dehradun, Uttarakhand and Optical Society of India.
10. *21st West Bengal State Science and Technology Congress (WBSSTC-2014)*, organised by The University of Burdwan and DST, Govt. of WB, Burdwan, 2014.

11. *National Seminar on Condensed Matter, Laser and Communication* (NSCMLC-2015), organized by Dept. of Physics, The University of Burdwan, Purba Bardhaman.

Professional Courses/workshops attended

1. 61st Orientation Programme (from 26th December, 2006 to 22nd January, 2007) organised by Academic Staff College, The University of Burdwan, Purba Bardhaman.
2. 9th Refresher Course in Physics (from 16th February, 2008 to 7th March, 2008) organised by Academic Staff College, The University of Burdwan, Purba Bardhaman.
3. 2nd Refresher Course in Information Communication Technology (Multidisciplinary) (from 4th March, 2011 to 24th March, 2011) organised by Academic Staff College, The University of Burdwan, Purba Bardhaman.
4. 3rd Refresher Course in Information Communication Technology (ICT) (from 10th March, 2012 to 30th March, 2012) organised by Academic Staff College, The University of Burdwan, Purba Bardhaman.
5. 6th Refresher Course in Information Communication Technology (from 26th November, 2014 to 16th December, 2014) organised by Academic Staff College, The University of Burdwan, Purba Bardhaman.
6. Workshop for Orientation/Awareness programme on NAAC accreditation (on 25th August, 2015) organised by the West Bengal Council of Higher Education in collaboration with The University of Burdwan.

Administrative Responsibilities

1. Member, Routine Committee
2. Member, Admission Committee
3. Member, ICT Committee

University Assignments Performed

1. Officer-in-charge, University Examination centre at Katwa College
2. External Examiner: University Practical Examination
3. Internal Examiner: University Practical Examination
4. Chairman: Examination, The University of Burdwan University
5. Examiner and Reviewer: The University of Burdwan University

Teaching Responsibilities

- **Theoretical Courses**
 - ❖ In NEP, B.Sc. (Major) courses: -
 1. Semester II - Mechanics
 2. Semester III – Electrodynamics

- ❖ In CBCS, B.Sc. (Honours) courses: -
 1. Semester I – Mechanics
 2. Semester II – Electricity & Magnetism
 3. Semester III – Thermodynamics
 4. Semester IV – Elements of Modern Physics
 5. Semester V – Classical Dynamics and Quantum Mechanics
 6. Semester VI – Electro-Magnetic Theory and Astronomy and Astrophysics

- **Practical Courses (Laboratory Work)**
 - ❖ In CBCS, B.Sc. (Honours) courses: -
 1. Semester IV – Modern Physics
 2. Semester V – Solid State Physics
 3. Semester VI – Electro–Magnetic Theory
 4. Semester V – Modern Physics (General course)

Research Interests

Optical computing, Quantum Computing, Non-linear optics and multi-valued logic