Dr. Saswati Dey

Assistant Professor
Department of Physics
Ramnagar College
Depal, Purba Medinipur, 721453

Permanent Address:

CHANDRA-BINA House, Roy bagan
P.O. – Buroshibtala
P.S. – Chinsurah
Dist. - Hooghly
PIN code- 712105
West Bengal, India

Nationality: Indian
Date of birth: 9th December, 1988
Mobile: +919830664235, +919051368336
Email: saswatiid524@gmail.com

Educational Qualifications:

Ph.D (Experimental Physics):
Year of degree awarded: 2018
Institute/University: University of Calcutta
Thesis title: Spectroscopic studies of the nonlinear quantum optical resonances in atomic vapour
Supervisor: Dr. Biswajit Ray, Associate Professor in Physics, University of Calcutta

M.Sc.:
Year of passing out: 2011
Institute/University: University of Calcutta
Subjects: Physics, Special papers: Laser spectroscopy and Quantum electronics

B.Sc.:
Year of passing out: 2009
Institute/University: Serampore College, University of Calcutta
Subjects: Physics (Hons.), Mathematics (Gen.), Electronics (Gen.)

H.S.:
Year of passing out: 2006
Institute/University: Chinsurah Balika Bani Mandir
Board: WBCHSE
Subjects: Bengali, English, Mathematics, Physics, Chemistry, Addl- Biology

Secondary:
Year of passing out: 2004
Institute/University: Chinsurah Balika Bani Mandir
Board: WBBSE
Subjects: Bengali, English, Mathematics, Physical Science, Life Science, History, Geography, Addl- Physics

Achievements:

- Awarded National Scholarship in 2006
- Qualified GATE in 2011
- Qualified CSIR-UGC NET in 2012
- Awarded Research Fellowship in Science for Meritorious Students, BSR-UGC (25^{th} January 2012 to 24^{th} January, 2017)

Research Experience

Research Skill in laser spectroscopy:

Experimental: Experienced in spectroscopic measurements on quantum coherent resonances like electromagnetically induced trapping (EIT), coherent population trapping (CPT), electromagnetically induced absorption (EIA) etc. in atomic vapour medium using conventional cm sized cell. Minute analysis of the EIT and EIA resonances have been perfomed depending on the pump-probe intensity, atomic density, buffer gas effect, presence of external magnetic field etc. Also expertised in the investigation of the coherent resonances for micrometric thin cell.

Theoretical: Concept of Density matrix is applied to derive the optical Bloch equations from the Liouville's equation in order to qualitatively discuss the observed results.

Teaching Experience

(1) Have experience in taking Practical classes of students of M.Sc. in Physics (Specialization - Laser spectroscopy) of University of Calcutta (2012-2016).

(2) Assistant Professor in Physics, Dept. of Physics, Ramnagar College, Purba Medinipur (24^{th} April, 2017 onwards)

Publications:

[1] "Influence of intensity and temperature on Ξ-type EIT resonance"
S. Dey, B. Ray
Optik, 350, 172738 (2026)

[2] "A detailed study of the quantum coherent and saturating resonances using the hyperfine lines of rubidium"
S.Dey, C. Das, **S. Dey,** D. Bhattacharyya and B.Ray.
Hyp. Interact. 240:56 (2019)

[3] "Investigation of quantum coherence effects in a multilevel atom induced by three laser fields"
S. Dey, N. Aich, C. Chaudhuri and B. Ray.
Eur. Phy. J. D 69, 43 (1-11) (2015)

[4] "A study of the repumping laser and external magnetic field effect on coherent absorption resonance in alkali vapour"
S. Dey, N. Aich, S. Mitra, C. Chaudhuri, P.N. Ghosh and B. Ray.
Chem. Phys. Lett. 627, 107-115 (2015)

[5] "Investigation of high-contrast velocity selective optical pumping resonance at the cycling transition of Cs using fluorescence technique"
S. Dey, B. Ray, P. N. Ghosh, S. Cartaleva and D. Slavov.
Opt. Commun. 356, 378-388 (2015)

[6] "EIT line shape in an open and partially closed multilevel V-type system"
S. Dey, S. Mitra, P. N. Ghosh and B. Ray
Optik 126, 2711-2717 (2015)

[7] "Nonlinear coherent absorption resonance in optically thick medium"
S. Dey, N. Aich, C. Chaudhuri and B. Ray
Adv. Sc. Lett. 21, 2661-2664 (2015)

[8] "Temperature and magnetic field effects on the coherent and saturating resonances in Λ and V-type systems for ^{85}Rb-D_2 transition"
S. Mitra, **S. Dey**, M. M. Hossain, P. N. Ghosh and B. Ray
J. Phys. B: At. Mol. Opt. Phys. 46, 075002 (1-12) (2013)

Seminar presentations:

Oral Presentation:

1) **"Magnetic field effect on EIT resonances in Λ and Ξ-systems"** ***S. Dey et. al.*** (International conference on light quanta: modern perspectives and applications), 2015, University of Allahabad, Allahabad, India.

2) **"A study of the magnetic field effect on EIT in atomic medium"** ***S. Dey et. al.*** (A two-day seminar on 'Frontiers of Physics: An exchange of ideas on emerging directions) 2013, University of Burdwan, West Bengal, India.

Poster Presentations:

1) **"Nonlinear coherent absorption resonance in optically thick medium"** ***S. Dey****, N. Aich, C.Chaudhuri and B. Ray*. (**Poster Presentation**, **Conference Proceeding**),
"International workshop and conference on Frontiers of Spectroscopy", 2015, Banaras Hindu University, Varanasi, India.

2) **"Controlling the sign of the coherent resonance in atomic vapour"** ***S. Dey****, and B. Ray* (**Poster Presentation, Conference Proceeding**)
"Theme meeting on Ultrafast Science-2015", S. N. Bose National Centre for Basic Sciences, Kolkata, India.

Awards:

- **Best Oral presentation award (1st Prize)** for:
  "Magnetic field effect on EIT resonances in Λ and Ξ-systems" ***S. Dey et. al.***

  "International conference on light quanta: modern perspectives and applications, 2015", University of Allahabad, Allahabad, India.