Faculty Profile

1. Name: Swapan Mandal
2. Designation: Professor
3. Email(s): swapan.mandal@visva-bharati.ac.in
4. Date of Birth: 22nd Day of July, 1963
5. Contact number(s): Mob # 9434083616
6. Address: Quarter Number 39, Andrews Palli, Santiniketan-731235, India
7. Research ID (Google Scholar, ORCID ID, Scopus ID, WOS ID, Vidyan ID, Research Gate):
8. Membership of Learned Societies: Life members of 1. IACS and 2. LASSI
9. Homepage (If any): Not applicable
10. Publication Summary:

    (a) No. of Research papers -
    (b) No. of Book Chapters -
    (c) No. of Conference papers -
    (d) h-index -
    (e) i-10 index -

11. Date of Joining Visva-Bharati Service: 21.11.1993
12. Education:

Degree	Year	University/Institution
Ph. D.	1993	Calcutta University
M. Sc. / ~~M. Tech.~~	1985	Calcutta University
B. Sc.	1983	Calcutta University

13. Academic Positions held (in reverse chronological order)

Sl. No.	Positions held	Institution	Period
1	Professor of Physics	Visva-Bharati	01.01.2009 to date
2	Associate Professor	Visva-Bharati	01.01.2006 to 31.12.2008
3.	Reader	Visva-Bharati	21.11.2002 to 31.12.2005
4	Lecturer	Visva-Bharati	21.11.1993 to 20.11.2002

14. Areas of Research: Quantum Optics, Nonlinear Optics, and Laser Spectroscopy
15. Subject Specialization: Quantum Optics, Quantum technologies and Quantum Information theory
16. Courses Teach / Taught:

Undergraduate Courses	Quantum Physics, Electricity and Magnetism,

	Modern Physics (for Pass course UG students)
Postgraduate Courses	Electrodynamics, Atomic and Molecular Physics, Quantum Electronics (Special Paper).
Ph.D. Course-work	Quantum Optics

17. Research Guidance:
    (a) No. of Postdoctoral students (Completed / Ongoing): Dr. Sutapa Bhattacharjee
    (b) No. of Doctoral students (Completed / Ongoing): Ten students completed and four students are ongoing.
    (c) No. of M.Sc. Dissertations: Not available
18. Research Collaboration (National / International): 5 international collaborations (UK, Germany, Italy, Malaysia, Argentina)
19. Research Grants/Projects: 3 CSIR, 2 UGC, 1 UGC Research Award project, 1 DST SERCYS (7 Grants)

Sl. No.	Project Title	PI/Co-PI	Funding Agency	Amount	Completed/Ongoing

20. Professional Recognition/ Award/ Prize/Fellowship

Sl. No.	Name of Award	Awarding Agency	Year
1	Abdus Salam ICTP Associate	ICTP	2005-2011
2	TWAS-UNESCO Associateship (Two times)	ICTP	2012-2014 and 2015-2018

21. List of Scientific Publications: Attached

Sl. No.	Author(s)	Title	Journal	Year	Ref. link

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22. Books / Book Chapters: Attached

Sl. No.	Title	Name of Author(s)	Publisher	Year of Publication

23. Talks Delivered at International / National Conferences/Seminars/Symposium:

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Last updated on (20/08/2025)

Curriculum Vitae and Publications List of Dr. Swapan Mandal

1. Name: Dr. Swapan Mandal

2. Sex: Male.

3. Date of Birth: 22-07-1963

4. Place of birth: Village-Mahadevpur, P.O.-Maheshatala, Distt.-24 Parganas (S), Pin-743352, INDIA

5. Present employment: **Professor of Physics (since 1.1.2009), Visva-Bharati**.

6. Present address: Department of Physics, Visva-Bharati, Santiniketan-731235, INDIA. Telephone Number: 00-91-3643262751 to 756 (ext. 362) Fax No.: 00-91-3463262672 & 00-91-3463261016, E-Mail: swapanvb@rediffmail.com

7. Nationality: Indian.

8. Marital Status: Married.

9. Educational Qualification: M.Sc, Ph.D in Physics.

10. Academic award and distinction: (a) Awarded Junior Research Fellowship in 1986.

    (b) DST Young scientist in 1993.

    (c) Awarded as the speaker under Theoretical Physics Seminar Circuit Programme.

    (d). Visiting Professorship of Tripura University, Agartala, INDIA.

    (e) Visitorship under IISc-TIFR programme.

    (f) Visiting foreign Scientist, Max-Planck Institut fur Astrophysik Garching, Munich, Germany.

    (g) Visiting fellowship programme, Jawaharlal Nehru Centre for Advanced Studies, Bangalore.

    (h) Visiting foreign Scientist, Department of Optics, Palacky University, Olomouc, Czech Republic.

    (i) Visiting foreign Scientist, Instytut Fizyki, Uniwersytet Mikolaza Kopernica, Poland

    (j)Associate of the "The Institute of Mathematical Sciences"for the period January 2001-December 2003

    (k) Associate of the "Physical Research Laboratory" for the period 2002-2004.

    (l) Nominated under the International Exchange Programme with Czech Academy of Sciences and the Indian National Science Academy during the year 2003-2004.

    (m) Visiting Professor, Kulliyyah of Science, International Islamic University, Malaysia, during May-July, 2005.

    (n) Associate of the "International Centre for Theoretical Physics (ICTP), Trieste, Italy" for the period January 2005-December 2010.

    (o) Nominated under the International Exchange Programme with German Academy of Sciences and the Indian National Science Academy during the year 2009-2010 and 2017-18 (two times).

    (p) UGC Research award 2009.

    (q) Selected for the Visiting Researcher Programme under TWAS (Third World Academy of Sciences) and USM (Universiti Sains Malaysia) for the year 2012.

(r) Associate member of the Third World Academy of Sciences (TWAS), Trieste, Italy for the period 2012-2014

(s) Nominated under the International Exchange Programme with Royal Society of Edinberg, UK, and the Indian National Science Academy during the year 2013.

(t) Associateship at the University of La Plata under TWAS-UNESCO programme during 2012-14 and 2016-18 (Two times)

11. **Research Experience:** 35 years and investigated eight projects funded by DST (1 project under SERCYS), CSIR (3 projects), UGC (3 Major Research Project), and UGC Research Award Project (1).

1. **Guiding/guided research students:** Ten students (Dr. Anirban Pathak, Dr. Biswajit Sen, Dr. Saswata Ghosh, Dr. Shailendra Kumar Singh, Dr. Nasir Alam, Dr. Mohosin Alam, Dr. Dolan Krishna Bayen, Dr. Mononojit Kora, Dr. Arjun Mukhopadhyay, and Dr. Kartick Chandra Saha) have obtained their Ph.D degree in Physics. Five students (Mr. Soumen Das, Ms. Piyasi Shit, Mr. Pranab Mondal, Ms. Aditi Garai and Proyas Dutta) are working for their Ph.D degree in physics.
2. **Foreign Collaborators:**
   1. Professor Dr. Werner Vogel, Arbeitsgruppe Quantenoptik, Fachbereich Physik, University Rostock, Universitatsplatz 3, D-18051, Rostock, GERMANY. E-mail: Werner.vogel@uni-rostock.de
   2. Professor Jan Perina, Department of Optics, Palacky University, Olomouc, CZECH REPUBLIC. jan.perina@upol.cz
   3. Professor Jacek Karwowskii, Department of Physics and Astrophysics, Nicolous Kopernicus University at Torun, POLAND. E-mail: jka@phys.uni.torun.pl
   4. Professor Dr. Raul Rossignoli, IFLP-CONICET and Departamento de F´ısica, Universidad Nacional de La Plata, C.C. 67, La Plata (1900), Argentina, raul.rossignoli@gmail.com
3. **Indian Collaborators:**
   1. Professor P.K.Mukherjee, Department of Spectroscopy, Indian Association for the cultivation of Sciences, Kolkata-32, INDIA. E-mail: sppkm@iacs.mahendra.res.in
   2. Professor P.N.Ghosh, Department of Physics, Calcutta University, 92, A.P.C. Road, Kolkata-9, INDIA, E-mail: pnghosh@cal2.vsnl.net.in
4. **Field of research interest:** Line shape theory, Quantum Optics, Nonlinear Optics, Laser Spectroscopy and Mathematical physics.
5. **Member of the learned bodies/society:**
   (a) Life member of IACS (Indian Association for the Cultivation of Sciences).
   (b) Life member of LASSI (Laser and Spectroscopy Society of India).
6. **Teaching Experience:** Thirty one years teaching experience in PG and UG courses. Offered almost all the subjects covered for PG and UG students in Physics.
7. **Course designed:** The course on the special paper on “Quantum Electronics” for M.Sc part-II students for Visva-Bharati is designed. In addition to this, the course on “Laser Physics” for M.Sc part-II students of Visva-Bharati is also designed by me.
8. **Regular Referee of the following Scientific Journals:** Physics Letters A, Physical Review A, Modern Physics Letters B, Optics Communications, Pramana, Indian Journal of Physics, and Indian Journal of Pure & Applied Physics, International Jurnal of theoretical physics, Physica Scripta.
9. **Scientific meeting convened:**
   1. National conference on lasers and their applications in basic and applied sciences (NCLBAS-2005) convened during January 10-13, 2005. The proceeding of NCLBAS is published through a special issue of "Indian Journal of Physics" Vol.80 No.5 (2006).
   2. Conference on laser and their applications in basic and in applied sciences (CLBAS-2009) convened during Feb. 14-17, 2009. The proceeding of CLBAS is published through a special issue of "Indian Journal of Physics" Vol.84, No.8 (2010).
10. **Editorial Board Member: Applied mathematics & information sciences, http://amis.dixiewpublishing.com**
11. **References:** My collaborators.

List of Publications of Dr. Swapan Mandal

(a) Publications in International Refereed Journals

1. Line shape theory of Doppler-free coupled closely spaced transitions in presence of a strong field: The effect of non-resonant interaction, P.N.Ghosh and **Swapan Mandal,** *Chemical Physics Letters,* **Vol.164,** p.279-84 (1989).

2. Line shape and frequency shift of Lamb dip and crossover resonance dip in closely spaced transitions, **Swapan Mandal** and P.N.Ghosh, *Physical Review A,* **Vol.45,** p-4990-97 (1992).

3. Signal line shape in four-level double resonance spectroscopy with closely spaced levels, **Swapan Mandal** and P.N.Ghosh, Spectrochimica Acta, **Vol.48A,** p-1563-71 (1992).

4. Bloch-Siegert effect in three level RFMW double resonance, **Swapan Mandal** and P.N.Ghosh, Chemical Physics Letters, **Vol.193,** 185-90 (1992).

5. Line shape, frequency shift, Rabi splitting and two-photon resonances in four-level double resonance spectroscopy with closely spaced intermediate levels, **Swapan Mandal** and P.N.Ghosh, Physical Review A, **Vol. 47**, p.4934-45 (1993).

6. Photon number distribution of squeezed states: A graphical treatment, **Swapan Mandal,** Physical Review A, **Vol.58,** p.752-54 (1998).

7. Quantum oscillator of quartic anharmonicity, **Swapan Mandal,** Journal of Physics A: Mathematics &General, **Vol.31,** p.L501-L505 (1998).

8. The effect of strong field coherence on inversionless laser, **Swapan Mandal,** Asian Journal of Physics, **Vol.9,** p.436-41 (2000).

9. On the possibilty of continuous generation of squeezed states in a quartic anharmonic oscillator, **Swapan Mandal,** Journal of Physics B: Atomic, Molecular & Optical Physics, **Vol.33,** p.1029-38 (2000).

10. Phase fluctuations of coherent light coupled to a nonlinear medium of inversion symmetry, Anirban Pathak and **Swapan Mandal,** Physics Letters. A, **Vol. 252,** p.346-52 (2000).

11. Effects of field induced quantum coherence on absorptive lineshape of a V-type three level system, **Swapan Mandal,** Journal of Physics B: Atomic, Molecular & Optical Physics, **Vol.33,** p.4581-91 (2000).

12. Classical and quantum oscillators of quartic anharmonicities: Second order solution, Anirban Pathak and **Swapan Mandal,** Physics Letters A, **Vol. 286,** p.261-76 (2001).

13. Classical and quantum oscillators of sextic and octic anharmonicities, Anirban Pathak and **Swapan Mandal**, Physics Letters A, **Vol.298,** p.259-270 (2002).

14. An intuitive approach to the higher order solutions for classical and quantum oscillators of quartic anharmonicity, **Swapan Mandal,** Physics Letters A, **Vol.299**, p.531-542 (2002).

15. A simplified approach to the closed form approximate analytical solutions for classical and quantum oscillators of (n+1)-th anharmonicity, **Swapan Mandal**, Physics Letters A **Vol.305**, p.37-51 (2002) .

16. Squeezing, higher order squeezing, photon bunching and photon antibunching in a quadratic Hamiltonian, **Swapan Mandal**, Modern Physics Letters B, **Vol.16,** p.963-73 (2002).

17. Classical damped quartic anharmonic oscillator: A simple analytical approach, **Swapan Mandal,** International Journal of Nonlinear Mechanics, **Vol. 38,** p.1095-1101 (2003).

18. Erratum to "Classical damped quartic anharmonic oscillator: A simple analytical approach," **Swapan Mandal,**

International Journal of Nonlinear Mechanics, **Vol. 38**, p.1605-1605 (2003).

19. Photon-bunching, photon antibunching and nonclassical photon statistics of coherent light coupled to a cubic nonlinear medium, Anirban Pathak and **Swapan Mandal,** Modern Physics Letters B, **Vol.17**, p.225-234 (2003).

20. Effects of strong field coherence on laser without population inversion and absorptionless dispersion for a V-type three level system, Swapan Mandal, International Journal of Modern Physics B, **Vol.17**, p.2715-2734 (2003).

21. On the quantization problem of a driven harmonic oscillator with time dependent mass and frequency, **Swapan Mandal**, Modern Physics Letters B, **Vol.17**, p.983-90 (2003).

22. Two electrons in a harmonic potential: An approximate analytical solution, **Swapan Mandal,** P.K.Mukherjee and G.H.F.Diercksen, Journal of Physics B: Atomic, Molecular & Optical Physics, **Vol.36,** p.4483-94 (2003).

23. On the squeezing of coherent light coupled to a driven damped harmonic oscillator with time dependent mass and frequency, **Swapan Mandal,** Physics Letters A, **Vol.321,** p.308-318 (2004).

24. Erratum: "On the quantization problem of a driven harmonic oscillator with time dependent mass and frequency", **Swapan Mandal,** Modern Physics Letters B, **Vol.18,** p.51-51 (2004).

25. Approximate quantum statistical properties of a nonlinear optical coupler, **Swapan Mandal** and Jan Peřina, Physics Letters A **Vol.328,** p.144-156 (2004).

26. Effects of field induced quantum coherence on the absorptive lineshape of a four level system with three closely spaced upper levels, Saswata Ghosh and **Swapan Mandal,** Physical Review A, **Vol.70,** 023407 (10 pages) (2004).

27. On the photon-bunching and photon-antibunching of coherent light coupled to a driven damped harmonic oscillator with time dependent mass and frequency, **Swapan Mandal,** Optics Communication, **Vol.240,** p.363-378 (2004).

28. Effects of spontaneous decay on the absorptive lineshape for a V-type four level system: inversionless laser, Saswata Ghosh and **Swapan Mandal**, Asian Journal of Physics, **Vol.13**, p.xxx-xxx (2004).

29. Analytical solutions of arbitrary orders to the classical and quantum oscillators with velocity-dependent quartic anharmonicity, **Swapan Mandal**, Modern Physics Letters B, **Vol.18,** p.1453-66 (2004).

30. The approximate solution of a classical quartic anharmonic oscillator with periodic force: A simple analytical approach, **Swapan Mandal,** Communications in Nonlinear Science and Numerical simulation, **Vol.10**, p.341-352 (2005).

31. Squeezed states in spontaneous Raman and in stimlated Raman processes, Biswajit Sen and **Swapan Mandal,** J.Mod.Opt, **Vol.52**, p.1789-1807 (2005).

32. Nonclassical photon statistics in spontaneous Raman and in stimulated Raman processes, Biswajit Sen and **Swapan Mandal,** Indian Journal of Physics, **Vol.80**, p.545-549 (2006).

33. Spontaneous decay controlled inversionless laser in a V-type four level system, Saswata Ghosh and **Swapan Mandal**, Optics Communications, **Vol.264,** p.219-224 (2006).

34. Comments on "Higher order squeezing of the electromagnetic field in spontaneous and in stimulated Raman processes" Biswajit Sen and **Swapan Mandal,** J.Mod.Opt, **Vol.53**, p. 2811-14 (2006).

35. Quantum statistical properties of the spontaneous Raman and stimulated Raman processes, Biswajit Sen, **Swapan Mandal** and Jan Peřina, Journal of Physics B: Atomic, Molecular & Optical Physics**, Vol.40,** p.1417-27 (2007).

36. Corrigendum on "Quantum statistical properties of the in spontaneous Raman and stimulated Raman processes," Biswajit Sen, **Swapan Mandal** and Jan Peřina, Journal of Physics B: Atomic, Molecular & Optical Physics, **Vol.40,** p.1955-1955 (2007).

37. Squeezing, Photon bunching, photon antibunching and nonclassical photon statistics in degenerate hyper Raman processes, Biswajit Sen and **Swapan Mandal,** Journal of Physics B: Atomic, Molecular & Optical Physics, **Vol.40,** p.2901-2916 (2007).

38. Squeezing effects in the sum and difference of the field amplitude in the Raman process, Biswajit Sen and **Swapan Mandal**, Modern Physics Letters B, **Vol.21,** p.1107-1110 (2007).

39. Comments on "nth-order squeezing of the field amplitude in Raman process as a generalization of the higher-order squeezing" Biswajit Sen and **Swapan Mandal**, International Journal of Modern Physics B, **Vol.22,** p.2151-56 (2008).

40. Amplitude-squared squeezing of coherent light coupled to a driven quantum oscillator with time dependent mass and frequency, Shailendra Kumar Singh and **Swapan Mandal**, J.Mod.Opt, **Vol.55,** p.1387-1415 (2008).

41. Phase fluctuations of coherent light coupled to a driven quantum oscillator with time dependent mass and frequency, Shailendra Kumar Singh and **Swapan Mandal**, J.Mod.Opt, **Vol.55,** p.1603-1628 (2008).

42. Amplitude-squared and amplitude-cubed squeezing in stimulated Raman and in spontaneous Raman scattering, Biswajit Sen and **Swapan Mandal**, J.Mod.Opt, **Vol.55,** p.1697-1711 (2008).

43. Doppler free absorptive signal lineshape of a four level double λ -type system: Rabi splittings and the two photon effects, Saswata Ghosh and **Swapan Mandal,** Journal of Physics .B: Atomic, Molecular and Optical Physics, **Vol.42,** p. 145403 (11 pages) (2009).

44. An analytical study on absorptive lineshape of a driven N-type open four level system: Quantum interference effects, Saswata Ghosh and **Swapan Mandal,** Optics Communications, **Vol.283,** p.1832-1839 (2010).

45. Sensitivity of the population and the Pancharatnam phase for a trapped ion with Stark-shift, M A Bouchene, M Abdel-Aty, and **Swapan Mandal,** *Physical Review A,* **Vol.82,** 023409 (5 pages) (2010).

46. Coherent control on absorption and dispersion in closely spaced transitions for a four level system with three closely spaced upper levels, Saswata Ghosh and **Swapan Mandal,** *J.Mod. Opt,* **Vol. 57,** p.1428-1436 (2010).

47. Effects of spontaneous decay on absorptive lineshape in closely spaced transitions of an open four level system, Saswata Ghosh and **Swapan Mandal**, *Indian Journal of Physics,* **Vol. 84,** p.977-985(2010).

48. Amplitude-squared squeezing in spontaneous degenerate hyper Raman process, Biswajit Sen and **Swapan Mandal**, *Indian Journal of Physics* **Vol. 84,** p.1111-1117 (2010).

49. The solutions of the generalized classical and quantum harmonic oscillators with time dependent mass, frequency, two-photon parameter and external force: the squeezing effects, Shailendra Kumar Singh and **Swapan Mandal**, *Optics Communications,* **Vol.283,** p.4685-4695 (2010).

50. Analytical studies on pump induced optical resonances in an M-type six level system, Saswata Ghosh and **Swapan Mandal**, *Journal of Physics B: Atomic, Molecular and Optical Physics,* **Vol.43,** p.245505 (13 pages) (2010).

51. A theoretical analysis on coherent double resonant absorptive lineshape in closely spaced transitions for λ -type five level systems, Saswata Ghosh and **Swapan Mandal**, *Optics Communications,* **Vol.284,** p.376-387 (2011).

52. Double-control coherent absorption and transparency in a six-level optical gain medium, Saswata Ghosh and **Swapan Mandal**, *Physica Scripta,* **Vol.84,** 045405 (2011).

53. Squeezing and photon antibunching of the input coherent light coupled to a medium of second order nonlinearity, Biswajit Sen, **Swapan Mandal,** and Jan Peřina, *Asian Journal of Physics,* **Vol.20,** p.143-52 (2011).

54. Squeezing and photon antibunching in second harmonic generation: An analytical approach, Biswajit Sen, **Swapan Mandal,** and Jan Peřina, *Journal of Modern Optics* **Vol.59,** p.555-64 (2012).

55. Intermodal entanglement in stimulated Raman process, Biswajit Sen, Sandip Kumar Giri, **Swapan Mandal,** C. H. Raymond Ooi, and Anirban Pathak, *Phys.Rev.A,* **Vol.87,** p-022325 (2013).

56. Approximate analytical solutions of a pair of coupled oscillators, Nasir Alam, **Swapan Mandal**, and Patrik Öhberg, *Journal of Physics B: Atomic, Molecular and Optical Physics.*, **Vol.48,** 045503 (7 pp) (2015).

57. Exact dynamics and squeezing in two harmonic modes coupled through angular momentum, N Canosa, **Swapan Mandal** and R Rossignoli, *Journal of Physics B: Atomic, Molecular and Optical Physics.,* **Vol.48,** 165501 (8 pp) (2015).

58. Nonclassical properties of coherent light in a pair of coupled anharmonic oscillators, Nasir Alam and **Swapan Mandal,** *Optics Communications,* **Vol. 359,** 221-33 (2016).

59. On the quantum phase fluctuations of coherent light coupled to a degenerate parametric amplifier, Mohosin Alam, **Swapan Mandal** and Mohamed Ridza Wahiddin, *Optik - International Journal for Light and Electron Optics,* **Vol.127,** 2988-91 (2016).

60. On the quantum phase fluctuations of coherent light in a chain of two anharmonic oscillators coupled through a linear one, Nasir Alam and **Swapan Mandal,** *Optics Communications,* **Vol. 366,** 340-48 (2016).

61. Derivation of multi-photon anharmonic oscillator model from its classical counterpart, **Swapan Mandal,** *Optik - International Journal for Light and Electron Optics,* **Vol.127,** 10042-48 (2016).

62. Classical and quantum harmonic oscillators with time dependent mass and frequency: A new class of exactly solvable model, **Swapan Mandal,** *Optics Communications,* **Vol. 386,** 37-42 (2017).

63. Quantum phase fluctuations of coherent and thermal light coupled to a non- degenerate parametric oscillator beyond rotating wave approximation, Mohosin Alam, **Swapan Mandal** and Mohamed Ridza Wahiddin, *Optics Communications,* **Vol. 398,** 1-11 (2017).

64. Squeezing, mixed mode squeezing, amplitude squared squeezing and principal squeezing in a non-degenerate parametric oscillator , Mohosin Alam, **Swapan Mandal** and Mohamed Ridza Wahiddin, *Optik - International Journal for Light and Electron Optics,* **Vol.157**, 1035-52 (2018).

65. Interaction of light and semiconductor can generate quantum states required for solid state quantum computing: Entangled, steered and other nonclassical states; Arjun Mukhopadhyay, Biswajit Sen, Kishore Thapliyal, **Swapan Mandal,**and Anirban Pathak, *Quantum Information Processing,* **Vol.18,** Article No. 234 (23 pages) (2019).

66. Bose-condensed optomechanical-like system and a Fabry-Perot cavity with one movable mirror: Quantum correlations from the perspectives of quantum optics; Nasir Alam, Kishore Thapliyal, Anirban Pathak**,** Biswajit Sen, Amit Verma, and **Swapan Mandal,** *European Physical Journal D*: *Atomic, Molecular, Optical and Plasma Physics,* **Vol.73,** 139 (2019).

67. Classical and Quantum Description of a periodically Driven multi-photon anharmonic oscillator, Dolan Krishna Bayen and **Swapan Mandal,** *Optical and Quantum Electronics,* **Vol.51***, Art. 388* (13 pages) (2019).

68. Two-photon resonances, ac Stark splittings, and shifts of the resonance peaks in Doppler free absorptive lineshapes of a double-lambda type four level system, Monojit Kora and **Swapan Mandal,** *Chemical Physics Letters,* 136955 Vol. 720 (2020)

69. Squeezing of coherent light coupled to a periodically Driven two-photon anharmonic oscillator, Dolan Krishna Bayen and **Swapan Mandal,** *The European Physical Journal Plus,* **Vol.135,** 408 (2020).

70. Nonlinear effects on the dynamics of quantum harmonic modes coupled through angular momentum, Norma Canosa, Raul Rossignoli, Javier Garcia, **Swapan Mandal,** and Kartick Chandra Saha, *J. Phys. B: At. Mol. Opt. Phys.* **53** 215402 (2020).

71. *Quantum Anharmonic oscillator with velocity- and position-dependent anharmonicities: An exactly solvable model under rotating wave approximation,* **Swapan Mandal**, Monojit Kora, Dolan Krishna Bayen, Arjun Mukhopadhyay and Kartick Chandra Saha, *Quantum Physics Letters*. **9,** 23-28 (2020).

72. Antibunching of photons in a coherent radiation field coupled to a non-degenerate parametric oscillator beyond rotating wave approximation; **Swapan Mandal**, Mohosin Alam, Monojit Kora and Mohamed Ridza Wahiddin , *Pramana Journal of Physics,* **Vol. 95**, 82 (2021) .

73. Quantum phase fluctuations of coherent light coupled to a semiconductor, Arjun Mukhopadhyay, Mohosin Alam, Biswajit Sen, and **Swapan Mandal,** *Pramana - J Phys,* **95,** 115 (2021)

74. Exactly solvable model of Classical and quantum oscillators of time dependent complex frequencies: Squeezing properties of coherent field, **Swapan Mandal,** Monojit Kora, Dolan Krishna Bayen and Kartick Chandra Saha , *Brazilian Journal of Physics,* **51,** 954-957 (2021).

75. On the Photon antibunching and amplitude squared squeezing of coherent light coupled to a periodically Driven anharmonic oscillator, Dolan Krishna Bayen and **Swapan Mandal,** *Applied Physics B:Lasers and Optics*, **127**. Art. 161 (2021).

76. Two-photon dispersion, dispersionless emission and dispersionless absorption in a Doppler free double-lambda type four level system, Monojit Kora and **Swapan Mandal,** *Eur. Phys. J. Plus,* **Vol.137, Art.17** (2022).

77. The quantum phase fluctuation parameters of coherent light coupled to a Harmonically driven quartic anharmonic oscillator, Dolan Krishna Bayen and **Swapan Mandal,** *Eur. Phys. J. Plus,* **Vol.137, Art.315** (2022)..

78. Correction: Exactly Solvable Model of Classical and Quantum Oscillators of Time Dependent Complex Frequencies: Squeezing Properties of Coherent Field, **Swapan Mandal,** Monojit Kora, Dolan Krishna Bayen and Kartick Chandra Saha, *Brazilian Journal of Physics,* **52,** 77 (2022).

79. Nonclassical and quantum phase properties in exciton induced exciton-vacuum field interaction, Arjun Mukhopadhyay, and **Swapan Mandal,** *Eur. Phys. J. Plus,* **Vol.137, Art.758** (2022).

80. Nonclassical properties of a non-degenerate parametric amplifier, Tuhina Sinha, Mohosin Alam, Arjun Mukhopadhyay, **Swapan Mandal**, and S. S. Hassan, *Optik - International Journal for Light and Electron Optics,* **Vol.271**, 170040 (2022).

81. Analytical investigation on the Autler–Townes splittings and the two-photon effects in a Doppler free signal lineshape of a double-λ type four-level system, Monojit Kora and **Swapan Mandal,** *Pramana Journal of Physics,* **Vol. 97**, Art.4 (2023).

82. Effects of micromotion on the squeezing and on the dynamical behaviour of ion in a Paul Trap, Dolan Krishna Bayen and **Swapan Mandal,** *Eur. Phys. J. Plus,* **Vol.138, Art.276** (2023).

83. An exact algebraic solution of two harmonic modes coupled through the angular momentum, **Swapan Mandal,** Kartick Chandra Saha, Dolan Krishna Bayen, Norma Canosa and Raul Rossignoli, *Appl. Phys..B: Lasers and Optics,* **Vol.129,** Art.75 (2023).

84. Amplitude squared squeezing and the photon antibunching of thermal light interacting with two oscillators coupled through the angular momentum, **Swapan Mandal**, Kartick Chandra Saha, Dolan Krishna Bayen, Norma Canosa and Raul Rossignoli, *Eur. Phys. J. Plus,***Vol.138, Art.932** (2023).

85. Squeezing and bunching of photons of coherent light interacting with two quantum anharmonic oscillators coupled through the angular momentum, Dolan Krishna Bayen, Kartick Chandra Saha and **Swapan Mandal,** *Optical and Quantum Electronics,* **Vol. 56, Art.:832** (2024).

86. Non-classical properties of coherent light interacting with two harmonic modes coupled through the angular momentum, Kartick Chandra Saha, Dolan Krishna Bayen, and **Swapan Mandal**, *Pramana Journal of Physics,* **Vol. 99**, Art.44 (2025).

87. An analytical investigation of a two-electron quantum dot in a quartic anharmonic potential, Soumen Das and **Swapan Mandal,** *Physica B: Condensed Matter,* **705,** 417014 (2025).

(b) Publications in National Refereed Journals: NIL

(c) Book Publication

1. *Effect of squeezed radiaiton field on a two level atom,* **Swapan Mandal** and P.N.Ghosh*, "Recent trends in quantum*

optics, edited by R.Inguva, Plenum, New-York) p.241-45 (1993).

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