CURRICULUM VITAE / RESUME

PERSONAL DETAILS

Name	**:**	**PUNIT KUMAR**
Date of Birth	:	18th, April, 1972.
Designation	:	Associate Professor
Affiliation	:	Department of Physics, University of Lucknow, Lucknow –226007, India.
Permanent Address	:	C - 919, Indiranagar, Lucknow - 226016, India.
Telephone No.	:	+91-9450645244 ; +91-522-4006170
E-Mail	:	punitkumar@hotmail.com ; drpunitlko@gmail.com

ACADEMIC QUALIFICATIONS

1992 - B.Sc. - University of Lucknow, India
1994 - M.Sc. - University of Lucknow, India
1997 - NET - National Eligibility Test, CSIR, India
1999 - Ph.D. - University of Lucknow, India
Title of Ph.D. thesis : Ion Channel Guiding In Free Electron Laser With Circularly Polarized Wiggler

RESEARCH INTERESTS

1. Engaged in theoretical research since 1995. Carried out extensive theoretical research on Free-Electron Lasers and introduced ion-channel guiding. The investigations were performed in both the Low as well as in the High gain regimes. The results are being heavily cited.

2. Also worked in the field of Laser - Plasma Interaction and studied the parametric instabilities involved and explored possibilities of wakefield acceleration.

3. Currently, the focus of the research work is in the recently progressed area of Quantum Plasma. Have carried out studies on wakefield and ponderomotive acceleration in varied configurations. We have also worked on the parametric instabilities with special emphasis on modulation instability in magnetized quantum plasma. Studies on second harmonic Raman forward and backward scatterings have been performed and the results have been communicated for publication. Effect of dust in quantum plasma and particle acceleration by whistler waves have also been studied. Very recently, we have started studying laser interaction with magnetized quantum plasmataking into account the interaction between the spin-up and spin-down degenerate electrons. The difference in concentration induced by the magnetic field gives rise to a new wave.

4. Have recently started PIC simulation of gamma ray generation by intense laser beam interacting with highly dense plasma in collaboration with group headed by Prof. A. V. Kim at Institute of Applied Physics of the Russian Academy of Sciences, Russia.

RESEARCH PROFILE

Number of refereed papers	:	50
Number of papers presented in conferences	:	109
Citations	:	867
h-index	:	16
i10-index	:	21
Science articles	:	106
Research interest score	:	374

TEACHING ASSIGNMENTS

1. Visiting Assistant Professor – University of California at Berkeley, USA – 2020 and 2021.
2. Associate Professor – University of Lucknow, India – 2016 to continuing
3. Assistant Professor – University of Lucknow, India – 2004 to 2016.
4. Part-Time Lecturer – University of Lucknow, India – 1996 to 2004.

AWARDS/HONOURS/FELLOWSHIPS

2021 Teachers Day award from Govt. of U.P., India
2021 Research Excellence Award, from Institute of Scholars, India
2020 International Scientist Awards 2020, VDGood Professional Association, India
2020 'Acclaim' award from University of Lucknow
2020 'Protsahan' award from University of Lucknow
2020 'Udeepan' award from University of Lucknow
2019 INSA Bilateral Exchange Fellowship – 2019
2018 Best Poster Prize, 2nd AAPPS-DPP Conference, 11-17 Nov, 2018, Kanazawa, Japan
2018 Travel grant from CSIR to attend ICPSA 2018 at Zhengzhau University, China
2017 Outstanding Contribution in Reviewing, Elsevier, Netherlands
2017 Travel grant from DST-SERB to attend ICOPS 2017 at Atlantic City, U.S.A.
2017 Member of Executive Committee of Plasma Science Society of India (PSSI) for 2017 - 2019
2016 'UGC Research Award' in Physical Sciences for 2016-2018
2014 Travel grant from CSIR to attend Plasma Accelerator School, CERN, Switzerland
2014 Grant from COSTED to attend Plasma Accelerator School, CERN, Switzerland
2014 Aid from Ratan Tata Trust, for visit to CERN, Switzerland
2012 Grant from IAEA to attend a course at ICTP, Italy
2010 Grant from IAEA to attend a course at ICTP, Italy
2009 Grant from IAEA to attend a course at ICTP, Italy
2006 Grant from IAEA to attend a course at ICTP, Italy
1998 Travel grant from CSIR to attend FEL 98 at Jefferson Lab, U.S.A.

RESEARCH PROJECTS

S.No.	Title of Project	Funding Agency	Designation	Status
1	Laser-plasma interaction : Parametric instabilities and wakefield generation	SERC, Department of Science & Technology SR/S2/HEP-12/2005	Co-Investigator	Completed
2	Interaction of laser beams with quantum plasma : Parametric instabilities	Council of Scientific & Industrial Research (CSIR), India 03(1170)/10/EMR-II	Principal Investigator	Completed
3	Wakefield generation in interaction of laser pulses with quantum plasma	University Grants Commission (UGC), India 39-458/2010(SR)	Principal Investigator	Completed
4	Collective excitations by laser pulse in high density degenerate quantum plasma	University Grants Commission (UGC), India RA-2016-18-GE-UTT-7276	Principal Investigator	Completed
5	Interaction of laser pulse with quantum plasma : Spin-up and spin-downexchange interaction	Board of Research in Nuclear Sciences (BRNS) 39/14/12/2016-BRNS	Principal Investigator	Completed
6	Ultrabright plasma-based gamma ray sources with petawatt laser pulses	DST-RFBR INT/RUS/RFBR/P-272	Principal Investigator	Completed
7	Studies on spin polarized, high density degenerate	SERB-DST MTR/2021/000471	Principal Investigator	Ongoing

	quantum plasma			

BOOKS / CHAPTERS AUTHORED

1. Plasma in the service of mankind, ISBN-978-93-5391-891-0
2. Ion Channel Guiding in Free Electron Laser (FEL), ISBN-978-81-931392-9-5
3. Wakefield Acceleration in Quantum Plasma, ISBN-978-81-931392-2-6
4. Particle acceleration by whistler pulse in high density quantum plasma, A chapter in – '*Plasma and Fusion Science: From Fundamental Research to Technological Applications*', Apple Academic Press, New York, Hard ISBN: 9781771884532, E-Book ISBN: 9781771884549
5. Blogs : A self-evolving means of education, A chapter in – 'Innovative Learning Strategies', ISBN-978-81-313-1245-2
6. Nuclear Fusion : New breakthrough promising solution to energy crisis, A chapter in – 'Recent developments and techniques in physical sciences', Weser Books, Germany, ISBN – 978-3-96492-444-5 (paperback), 978-3-96492-445-2 (hardbound).

RESEARCH COLLABORATIONS

- Prof. Arkady Kim, Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia.
- Prof. Renato Fedele, University of Naples "Federico II", Napoli, Italy.
- Dr. Sarveshwar Sharma, Institute for Plasma Research (IPR), Gandhinagar, India.
- Dr. Umit Deniz Goker, İstanbul Gelişim University, Avcılar-Istanbul, Turkey.
- High Energy Density group at Facility for Antiproton and Ion Research (HED@FAIR), Darmstadt, Germany.
- Dr. P. A. Andreev, Lomonosov Moscow State University, Russia

CONFERENCE/WORKSHOP ORGANIZED

- '12th International Conference on Plasma Science and Applications (ICPSA-2019)', 11-14 November, 2019.
- Workshop on 'Petawatt Lasers as Gamma Ray Sources', 12 March, 2018.
- SPIE conference on 'Relativistic Plasma Waves and Particle Beams as Coherent and Incoherent Radiation Sources', 3 – 4 April, 2019.
- Workshop on 'Air Quality Management in Indian Cities: Overview of National Clean Air Programme (NCAP, GoI) Key insights for students and Educational institutions', 6 February, 2020.
- Webinar on 'Today's India : Transforming Challenges into Opportunities' on 20 July, 2020.
- Webinar on 'New Education Policy' on 8 August, 2020.
- Webinar on 'Role of Women in India's Struggle for Freedom' on 15 August, 2020.
- Webinar on 'Self Reliant India : Necessity of Personalized Investment' on 28 November, 2020.
- Workshop on 'Web Based Learning' between 13-19 December, 2020.
- Webinar on 'Incidents of Present : A solution to problems of future' on 20 December, 2020.
- Workshop on 'Digital Educational Initiatives' between 20 – 26 January, 2021 in online mode.
- Member of Technical Committee of Plasma series of conferences organized by PSSI.
- Member of International Advisory Board of conferences organized by AAAPT.

OVERSEAS VISITS

1.	1998	**U.S.A.**	Jefferson Lab, Williamsburg, Virginia
2.	2006	**Italy**	ICTP, Trieste
3.	2007	**Nepal**	Kathmandu University
4.	2008	**Nepal**	Tribhuvan University
5.	2009	**Italy**	ICTP, Trieste
6.	2010	**Italy**	ICTP, Trieste
7.	2010	**Austria**	Universitat Innsbruck, Austria
8.	2012	**Italy**	ICTP, Trieste
9.	2012	**Slovenia**	Higher School of Advance Sciences, Ljubljana
10.	2014	**Czech Republic**	Czech Technical University, Prague
11.	2014	**Germany**	Gothe University, Frankfurt
12.	2014	**Nepal**	Kathmandu University
13.	2014	**Switzerland**	CERN, Geneva
14.	2014	**France**	ITER
15.	2016	**Singapore**	Nanyang Technical University (NTU)
16.	2016	**Malaysia**	Langkawi
17.	2017	**Belgium**	Katholieke Universiteit, Leuven
18.	2017	**Germany**	Technische Universitat, Darmstadt
19.	2017	**Germany**	HED Group at FAIR, Darmstadt
20.	2017	**Germany**	GSI, Darmstadt
21.	2017	**Holland**	Dutch Institute for Fundamental Energy Research (DIFFER)
22.	2017	**Germany**	Ruhr University, Bochum
23.	2018	**Russia**	Institute of Applied Physics, Nizhny Novgorod
24.	2018	**Russia**	Presidium of Russian Academy of Sciences, Moscow
25.	2018	**Russia**	Lomosonov Moscow State University
26.	2018	**China**	Zhengzhou University, China
27.	2018	**Japan**	Kanazawa University, Japan
28.	2019	**Poland**	Institute for Nuclear Sciences, Warsaw
29.	2019	**Hungary**	Wigner Institute for Nuclear Physics, Budapest
30.	2019	**Slovak**	Comenius University, Bratislava
31.	2019	**Austria**	Wien University, Viena
32.	2019	**Poland**	Institute of Plasma Physics & Laser Microfusion (IPPLM), Warsaw

REVIEWERSHIP OF JOURNALS

1. Physical Review E
2. Physics of Plasmas
3. Canadian Jour. of Physics
4. Laser & Particle Beams
5. Journal of Plasma Physics
6. Sci. Jour. of Civil Eng. & Arch.
7. Sci. Jour. of Physics
8. Matter and Radiation at Extremes
9. Modern Reviews on Plasma Physics

MEMBERSHIP OF PROFESSIONAL BODIES

1. Plasma Science Society of India (PSSI) – Member Executive Body
2. Indian Laser Association (ILA)
3. Optical Society of America (OSA)

4. Fellow Nation, Animal Production & Management (FNAPM)
5. Indian Academicians & Researchers Association
6. Vigyan Bharti (VIBHA)

MEMBERSHIP OF EDITORIAL BOARD

1. International Journal of Physics and Application (IJPA)
2. International Journal of Materials Physics (IJMP)
3. International Journal of Applied Physics (IJAP)
4. Vidyavart
5. International Journal of Science and Engineering Research (IJSER)
6. World Journal of Applied Physics

THESIS SUPERVISED

2021	Ph.D.	Quantum effects in interaction of intense electromagnetic waves with high density plasma	Nafees Ahmad
2021	M.Sc.	Study of high accelerating gradient supported by plasma based particle accelerators	Pooja Gupta
2021	M.Sc.	Waves and instabilities due to propagation of electromagnetic waves in plasma	Neha
2020	Ph.D.	Interaction of high intensity laser beams with degenerate quantum plasma	Shiv Singh
2020	M.Sc.	Theoretical study of quantum plasma	Priya Soni
2018	Ph.D.	Propagation of intense laser pulse through high density plasma	Nisha Singh Rathore
2017	Ph.D.	Particle acceleration in quantum plasma	Abhisek K Singh
2013	Ph.D.	Interaction of laser beam with quantum plasma	Chhaya Tiwari
2007	M.Phil.	Growth & Dislocation distribution of mixed crystal of NaCl-NaBr	L P Singh

COURSES

	Title of Course	Venue	Duration
1.	International Workshop on Frontiers of Plasma Science	ICTP, Trieste , Italy 21^{st}, Aug. – 1^{st}, Sept., 2006.	2 weeks
2.	Summer College on Plasma Physics	ICTP, Trieste , Italy 10^{th}-28^{th}, Aug., 2009	3 weeks
3.	International Advanced Workshop on the Frontiers of Plasma Physics	ICTP, Trieste , Italy 5^{th} – 16^{th} , July, 2010	2 weeks
4.	Joint ICTP-IAEA College on Plasma Physics	ICTP, Trieste , Italy 1^{st}-12^{th}, Oct., 2012	2 weeks
5.	CERN Accelerator School	CERN, Switzerland 23^{rd}-29^{th} Nov., 2014	1 week
6.	Training programme on outreach campaign for planet Earth	NIPER, Chandigarh 11^{th}-13^{th} Nov., 2009	3 days
7.	Orientation Programme	UGC Academic Staff College, Lucknow University, 1-28 Feb., 2005	4 weeks
8.	Refresher Course (Physics, Electronics and Renewable Energy)	UGC Academic Staff College, Lucknow University, 2-23 July, 2012	3 weeks
9.	Refresher Course (Human Rights)	UGC Academic Staff College, Lucknow University, 1-21 March, 2013	3 weeks
10.	Refresher Course (Physics, Electronics, Renewable Energy& IT)	UGC - Human Resource Development Centre, Lucknow University, 2-23 Feb., 2015	3 weeks

11.	Refresher Course (Information & Communication Technology)-ID	UGC - Human Resource Development Centre, Lucknow University, Nov., 07-28, 2017	3 weeks
12.	Faculty Development Programme on Teaching through E-Learning Technologies: Development of E-Content	Online 31 May – 4 June, 2020	1 week

INVITED TALKS

1. विज्ञान संचार में शोध संभावनाएं
   Workshop for science writers, Vigyan Parishad, Prayag, 16th – 17th March, 2009
2. Role of science communication in promoting campaign for environment protection
   NIPER, Chandigarh, 28th Nov., 2009
3. Lasers in physics lectures and demonstrations – a brief review
   6th Int. Conf. on Hands on Science, Ahmedabad, 27th – 31st Oct., 2009
4. Scienfotainment - Amalgamating science with entertainment
   12th International PCST Conference, New Delhi, 6th – 10th Dec., 2010
5. Blogs : A self evolving means of education
   Orientation Programme, UGC Academic Staff College, Lucknow University, 2011
6. Innovative methods in science education
   One week course, UGC Academic Staff College, Lucknow University, 2012
7. Role of internet in science education
   One week course, UGC Academic Staff College, Lucknow University, 2012
8. Role of social media in education
   Refresher course, UGC Academic Staff College, Lucknow University, 2013
9. Wiggler assisted wakefield acceleration
   Laser and plasma accelerators workshop 2013, 2nd-7thSept., 2013, Goa
10. Harmonic generation in magnetized quantum plasma
    Int. Conf. on plasma science & applications, 22nd-24thSept., 2014, Kathmandu
11. Science communication as an emerging discipline of study
    8th Science Communicators Meet, 4th – 5th Jan., 2015, Mumbai
12. Fourier transform in optics
    Nat. Conf. on Adv.Res. in Pure and App. Math., 9th May, 2015, TMH Univ., Moradabad.
13. Innovative strategies in Physics teaching
    Nat. seminar on skills to excel in higher education, 20th Sept., 2015, Lucknow
14. Science writing and attributes of a science communicator
    9th Science communicators meet, 3rd-7th Jan., 2016, Mysore
15. Science communication : A path towards a better quality of life
    Workshop on Science Communication, 25th June, 2016, KLE College, Navi Mumbai.
16. How could public understanding ofRenewable Energy be achieved andwhich means are potentially useful?
    Nat. Workshop on Solar Tech., 29th Aug., 2016, New Delhi.
17. Quantum Plasmas : A path towards nanoplasmonics
    Nanyang Technical University (NTU), Singapore, 25th November, 2016.
18. Quantum Plasmas : Interaction of Spin-up and Spin-down degenerate electrons
    National conference on Plasma Physics and Non Linear Dynamics, 23rd -24th March, 2017, JIS University, Kolkata, India
19. Raman Scattering in Quantum Plasma
    Katholieke Universiteit, Leuven, Belgium on 19th June, 2017
20. Plasma based particle acceleration
    Technische Universitat, Darmstadt, Germany on 20th June, 2017

21. Harmonic generation in magnetized quantum plasma
    HED Group at FAIR, Darmstadt, Germany on 20th June, 2017
22. Nonlinear Effects in Quantum Plasmas
    Dutch Institute for Fundamental Energy Research (DIFFER), Netherlands on 24th June, 2017
23. Quantum Plasma
    Ruhr University, Bochum, Germany on 26th June, 2017
24. भारत की सुरक्षा में विज्ञान संचार की भूमिका
    Media Mahotsav, 31stMarch- 1stApril, 2018, Bhopal
25. Quantum plasma – a path to nanoplasmonics
    Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia, 5th June, 2018
26. Spin polarization in quantum plasma
    Lomosonov Moscow State University, Moscow, 12th June, 2018
27. Langmuir waves in double layer Bioplasma
    Znengzhau University, China, 11th Oct., 2018
28. Two-stream instability with spin polarization in quantum magnetoplasma
    AAPPS-DPP, Kanazawa, Japan, 12-17 Nov., 2018
29. Electron hole instability in quantum semiconductor plasma with spin polarization
    Plasma – 2018, Delhi University, New Delhi, 4th Dec., 2018
30. SPW in Semiconductor Quantum Plasma with Spin Polarization
    International Symposium on Advances in Functional & Biological Materials, Lucknow, 28 Feb., 2019
31. Quantum plasma – a path to nanoplasmonics
    Wigner Research Centre for Physics, Budapest, Hungary, 20 June, 2019
32. Role of electron spin in quantum plasma
    Comenius University, Bratislava, Slovac Rep., 21 June, 2019
33. Quantum plasma – a path to nanoplasmonics
    University of Vienna, Vienna, Austria, 22 June, 2019
34. Spin correlation in quantum plasma
    National centre for Nuclear Physics, Warsaw, Poland, 14 June, 2019
35. Spin polarization in quantum plasma
    Institute of Plasma Physics & Laser Microfusion, Warsaw, Poland, 26 June, 2019
36. Status of research in plasma physics
    Uttarakhand Science Congress, Dehradun, 27 February – 1 March, 2020.
37. Plasma for Future
    Advance Physics (Online), Somaiyah College, Mumbai, 6 - 8 August, 2020
38. Basic plasma physics and applications
    Summer school (online) on Plasma Physics, 6 - 31 July, 2020
39. Quantum Plasma
    Scholars colloquium on Plasma Physics, Physics Joint, Kolkata, India, 3 – 10 Sept., 2020
40. Spin interaction in quantum plasma
    International e-conference on plasma theory and simulations, GGD Central University, Bilaspur, India, 14 – 15 Sept.,2020
41. Growth of Beam-Plasma instability in spin polarized quantum magnetoplasma
    4th Asia Pacific Conference on Plasma Physics (online), 26 – 31 Oct., 2020
42. Beam-Plasma instability in spin polarized quantum magnetoplasma
    13th International Conference on Plasma Science and Applications (ICPSA-2020), conducted online by Ravenshaw University, Cuttak, 26 – 28 December, 2020
43. Future of Science, Technology and Innovation (STI) : Impacts on Education, Skills and Work
    Regional Science City, Lucknow, 28 February, 2021
44. Filamentation in spin polarized magnetized quantum plasma
    Int. Conf. on recent advances in fundamental and applied sciences (RAFAS), June 25 – 26, 2021

45. Raman Scattering in Magnetized Quantum Plasma
    14th International Conference on Plasma Science and Applications (ICPSA-2021), conducted online by Nanjing University of Science and Technology, China, 28 – 30 December, 2021
46. Filamentation In Spin Polarized Magnetized Quantum Plasma
    6th Asia-Pacific Conference on Plasma Physics on-line e-Conference, Oct 9-14, 2022 (AAPPS-DPP2022)

ADMINISTRATIVE ASSIGNMENTS

- Coordinated the conduct of OCES exam(conducted by **BARC**) from 2001 to 2012 at Lucknow centre.
- Worked as Assistant Superintendent U.G. Results, Lucknow University Exams from 2003 to 2012 and also worked as Assistant Superintendent U.G. Admissions, Lucknow University for the session 2004-05.
- Working as Superintendent/Assistant Superintendent/Tabulator/Collator, Lucknow University P.G. Exams since 2012.

SIGNIFICANT RESEARCH PUBLICATIONS (Peer-Reviewed)

1. Electron Trajectories and gain in free electron laser with ion channel guiding
   IEEE Trans. on Plasma Science 24 (6), 1359 (1996).
2. Dispersion relation and growth rate in a free electron laser with ion channel guiding
   Physical Review E 57 (2), 2256 (1998).
3. Harmonic generation in a free electron laser with circularly polarized wiggler and ion channel guiding
   IEEE Trans. on Plasma Science 27 (2), 637 (1999).
4. Spontaneous emission and gain in free electron laser with circularly polarized wiggler and ion channel guiding
   Free Electron Lasers – 1998, II-93 (1999)
5. Nonlinear theory of propagation of intense laser pulse in magnetized plasma
   Physics of Plasmas 9(1), 263 (2002).
6. Free electron laser with linearly polarized wiggler and ion channel guiding
   Physics of Plasmas 10(7), 3012 (2003).
7. FEL gain at upshifted ion-channel frequency and its harmonics
   Proceedings of DAE BRNS NLS – 2003, 193 (2003).
8. Electric and magnetic wakefields in a plasma channel
   Physical Review (Special Topics) – Accelerators and Beams 8, 071301-1 (2005).
9. Modulation instability of laser pulse in magnetized plasma
   Physics of Plasmas 12, 123104-1 (2005).
10. High frequency oscillations in quantum plasma
    Journal of Physics: C. S 208, 012051-1 (2010).
11. Low energy plasmon satellite in x-ray excited auger electron spectra of Ag, Pd, Rn, In, Sn & Sb
    Int. Jour. Eng. Res. & App. 2(4), 115 (2012).
12. Conductivity measurements due to thermal heating of germanium diode in reverse bias placed in different environments
    Int. Jour. of Th. & Applied Phys. 2(1), 187 (2012).
13. Electric, Magnetic wakefields and electron acceleration in quantum plasma
    Laser & Particle Beams 30 (2), 267 (2012).
14. Magnetic field generation by propagation of linearly polarized laser beam in magnetized plasma
    ISST Journal of Applied Physics 40 (1), 37 (2013).
15. Ponderomotive acceleration in magnetized quantum plasma
    Proceedings of Plasma-2012, 101 (2013).
16. Density Plasma-Density Plasma Acceleration In High-Acceleration In High

Proceedings of COTII-2013, 53 (2013).

17. Field generation by interaction of electromagnetic wave with magnetized plasma
Proceedings of COTII-2013, 64 (2013).
18. Nonparaxial propagation of electromagnetic Wave in magnetized quantum plasma
Proceedings of NLS-23, CP – 07.07 (2014).
19. Inverse Faraday effect in magnetized plasma
Proceedings of COTII-2014, 168 (2014).
20. Particle acceleration by whistler pulse in high density quantum plasma
Proceedings of Plasma 2014, 218 (2014).
21. Effect of dust grains on propagation of electromagnetic wave in a cold quantum dusty plasma
Journal of Plasma Physics 81, 375810201-1 (2015).
22. Ponderomotive self focusing of linearly polarized laser beam in high density quantum plasma
Laser & Particle Beams 34 (4), 764 (2015).
23. Envelope evolution in propagation of intense laser beam in magnetized quantum plasma
Proceedings of DAE-BRNS NLS-24, CP -07.20 (2015.
24. Phase matched third harmonic generation of a Gaussian laser pulse in high density quantum plasma
Am. J. of Modern Physics 5(5), 154 (2016)
25. Particle acceleration by whistler pulse in high density quantum plasma
Plasma and Fusion Science, 373 (2016).
26. Effect of wiggler magnetic field on second harmonic generation in quantum plasma
Adv. In Phys. Th. & App. 52, 51 (2016).
27. Laser wakefield acceleration in quantum plasma channel
Int. J. Tech. Res. App. 42, 7 (2017).
28. Particle dynamics and spatial e- e+ density structures at QED cascading in circularly polarized standing waves
Physical Review A 95, 042127-1 (2017).
29. Harmonic generation in magnetized quantum plasma
AIP Proceedings 1728, 020173-1 (2016).
30. Density fluctuations due to Raman forward scattering in quantum plasma
AIP Proceedings 1728, 020682-1 (2016).
31. Electron acceleration by ponderomotive force in magnetized quantum plasma
Laser & Particle Beams 35(2), 252 (2017).
32. Ponderomotive potential and second harmonic backward Raman scattering in dense quantum plasmas
Journal of Physics CS 823, 012027-1 (2017).
33. Electron acceleration by whistler pulse in high-density plasma
Laser & Particle Beams 35(3), 386 (2017).
34. Second harmonic generation by whistler pulse in magnetized quantum plasma
AIP Proceedings 1824, 030017-1 (2017).
35. Second harmonic generation by circularly polarized laser pulse with two different spin states in magnetized quantum plasma
Proceedings of DAE-BRNS Nat. Laser Symp., CP -07.07 (2017).
36. Interaction of highly intense e.m. wave with high density quantum plasma
Report from High Energy Density gen by Heavy Ion & Laser Beams, 58 (2017).
37. Second harmonic generation in high density plasma
The African Review of Physics 12, 0011 (2017)
38. Electron acceleration by linearly polarized laser pulse in magnetized quantum plasma
Journal of Computational and Theoretical Nanoscience 14(6), 2285 (2017).
39. Electron acceleration in quantum plasma with spin-up and spin-down exchange interaction
AIP Proceedings 1953, 140054-1 (2018).
40. Interaction of intense laser pulses with quantum plasma
Report from High Energy Density gen by Heavy Ion & Laser Beams, 55 (2018).

41. Oblique propagation of e.m. wave in magnetized quantum plasma with two different spin states
AIP Proceedings 1953, 140053-1 (2018).
42. Quantum electrodynamic cascade structure in a standing linearly polarised wave
Quantum Elec. 48(9), 833 (2018).
43. Conversion efficiency of even harmonic generation by whistler pulse in quantum magnetoplasma
Laser & Particle Beams 37(1), S0263034619000089-1 (2019).
44. Studies in high density degenerate plasma
Report from High Energy Density gen by Heavy Ion & Laser Beams, 57 (2019).
45. Confinement of electrons in the focus of the dipole wave
Quantum Electronics 49(4), 314 (2019).
46. Electrostatic Langmuir waves and spin-electron-acoustic waves in spin polarized plasma double layer
Physics of. Plasmas 26 (12), 122101-1 (2019).
47. Studies on Spin Polarization in High Density Degenerate Plasma
Report from High Energy Density gen by Heavy Ion & Laser Beams, 32 (2020).
48. Surface plasma wave in spin-polarized semiconductor quantum plasma
Laser and Particle Beams 38(2), 159-164 (2020).
49. Beam-plasma streaming instability in spin polarized quantum magnetoplasma
Physica Scripta 95(7), 075604-1 (2020).
50. Laser beam guiding in partially stripped magnetized quantum plasma
Laser Physics 32, 016002 (2022).
51. Effect of spin polarization on filamentation in magnetized quantum plasma
Physica Scripta **97(11)**, 115601 (2022).

PAPERS in CONFERENCES

INTERNATIONAL

1. Spontaneous emission and gain in free electron laser with circularly polarized wiggler and ion channel guiding
XXthInternational FEL98 Conference, Virginia, U.S.A., 16th-21st Aug., 1998
2. Electric and magnetic wakefields in a parabolic plasma channel
Symposium on Fascinating Nonlinear Physics, ICTP, Trieste, Italy, 27th Aug., 2006
3. Effect of magnetic field on spatial dispersion relation of two modes coupling in cylindrical polar semiconductor
Symposium on plasma physics and material science, Kathmandu University, Kathmandu, Nepal, 24th – 26th, Jan., 2007
4. Interaction of linearly polarized laser beam with magnetized quantum plasma
4th - International Conference on the Frontiers of Plasma Physics and Technology (FPPT), Kathmandu, Nepal, 6th-10th, April, 2009
5. Propagation of e.m. waves in quantum plasma
Summer College on Plasma Physics, ICTP, Italy, 10th-28th, Aug., 2009
6. Lasers in Physics lectures and demonstrations – a brief review
6th International conference on Hands on Science, Ahmedabad, 27th-31st,Oct., 2009
7. Physics of Toys
6th International conference on Hands on Science, Ahmedabad, 27th-31st, Oct., 2009
8. Use of statistical information by Indian journalists : An analysis of articles on scientific research in vernacular press
11th International PCST Conference, New Delhi, 6th-10th, Dec., 2010
9. Harmonic generation in magnetised quantum plasma
International Advanced workshop on the Frontiers of Plasma Physics, ICTP, Trieste, Italy, 5th-16th , July, 2010
10. Information and communication technology in education
International seminar of the learning community, Lucknow, 18-19 June, 2011
11. Electron acceleration in quantum plasma with transverse magnetic field
Joint ICTP-IAEA College on Plasma Physics, ICTP, Trieste, Italy, 1st-12th, Oct., 2012

12. Proton acceleration by electromagnetic fields of intense laser pulses
WAMFER-2012, New Delhi,29th Nov-1st Dec., 2012
13. Electron acceleration by whistler pulse in magnetised quantum plasma
LPAW -2013, Goa, India, 2-7 September, 2013
14. Wakefields in quantum plasma channel
LPAW -2013, Goa, India, 2-7 September, 2013
15. Modulation instability in magnetised quantum plasma
LPAW -2013, Goa, India, 2-7 September, 2013
16. Modulation instability of a circularly polarised wave in magnetised quantum plasma
Int. Conf. on Plasma Sci. & App. ICPSA-2013, Singapore, 4-6 Dec., 2013
17. Terahertz radiation from a laser bunched relativistic electron beam in a magnetised wiggler with ion channel and an axial field
Int. Conf. on Plasma Sci. & App. ICPSA-2013, Singapore, 4-6 Dec., 2013
18. Nonlinear theory of propagation of intense laser pulses in quantum dusty magnetoplasma
7th Int. Conf. on Physics of Dusty Plasmas ICPDP 2014, New Delhi, 3-7 March, 2014
19. Self-focussing of intense laser beam in magnetized quantum plasma
26th Symp. on Plasma Physics & Tech., Prague, Czech Republic, 16-19 June, 2014
20. Relativistic and Ponderomotive nonlinearities in propagation of laser beam through quantum plasma
26thSymp.on Plasma Physics & Tech., Prague, Czech Republic, 16-19 June, 2014
21. Relativistic and ponderomotive instabilities in quantum plasma
Joint ICTP-IAEA College on advanced plasma physics, ICTP, Italy, 18-29 Aug., 2014
22. Harmonic generation in quantum magnetoplasma
Joint ICTP-IAEA College on advanced plasma physics, ICTP, Italy, 18-29 Aug., 2014
23. Harmonic generation in magnetized quantum plasma
Int. Conf. on Plasma Sci. and App. (ICPSA) – 2014, Kathmandu, Nepal, 22nd -24th Sept., 2014
24. An X-Ray FEL based on laser wakefield acceleration
CERN Accelerator School, CERN, Switzerland, 23rd-29th Nov., 2014
25. Density fluctuations due to Raman forward scattering in quantum plasma
ICC – 2015, Bikaner, 30-31 Oct., 2015
26. Dispersion of linearly polarized electromagnetic wave in magnetized quantum plasma
10th Asia Plasma & Fusion Association Conference (APFA-2015), IPR, Ahmedabad 14th-18th Dec., 2015
27. Ponderomotive force and backward Raman scattering in dense quantum plasma
10th Asia Plasma & Fusion Association Conference (APFA-2015), IPR, Ahmedabad 14th-18th Dec., 2015
28. Raman forward scattering in presence of wiggler magnetic field : enhances the acceleration
ICALPSM-2016, Lucknow, 16th-18th Jan., 2016
29. Ponderomotive self focussing of linearly polarized laser beam in high density quantum plasma
Int. Conf. on Plasma Sci. Tech. & App. (ICPSTA-2016), , Lucknow, 20th – 21st Jan., 2016
30. Second harmonic generation in quantum plasma and the effect of wiggler field
Frontiers of Physics & Plasma Science (FPPS-2016), Ujjain, 7th-8th November, 2016
31. Wiggler assisted harmonic generation in quantum plasma
Int. Conf. on Plasma Sc. & App. (ICPSA-2016), Langkawi, Malaysia, 28th-30th November, 2016
32. Second harmonic generation by whistler pulse in magnetized quantum plasma
Int. Conf. on Plasma Sc. & App. (ICPSA-2016), Langkawi, Malaysia, 28th-30th November, 2016
33. Laser wakefield acceleration in a quantum plasma channel
Int. Conf. On Chall. & Opp. for Tech. Innov.in India, Lucknow, India, 3 – 4 March, 2017
34. Harmonic generation in magnetized quantum plasma with separate spin-up and spin-down evolution of degenerate electrons
EMMI Workshop on Plasma Science, GSI, Darmstadt, Germany, 21-23 June, 2017
35. Ponderomotive electron acceleration in magnetized quantum plasma with two different spin states
Int. Conf. on Plasma Sci. & App. (ICPSA–2017), Walailak University, Thailand, 10-12 October, 2017
36. Oblique propagation of e. m. wave in magnetized quantum plasma with spin - up and spin - down exchange interaction
Int. Conf. on Plasma Sci. & App. (ICPSA–2017), Walailak University, Thailand, 10-12 October, 2017
37. Oblique propagation of e. m. wave in magnetized quantum plasma with two different spin states
2nd Int. Conf. on Condensed Matter & Applied Physics (ICC-2017), Bikaner, 24-25, Nov., 2017
38. Electron acceleration in quantum plasma with spin-up and spin-down exchange interaction
2nd Int. Conf. on Condensed Matter & Applied Physics (ICC-2017), Bikaner, 24-25, Nov., 2017
39. Role of spin-up and spin-down interaction in energy exchange in quantum magnetoplasma

Joint Meeting of High Energy Density Science at FAIR Collaboration and 10th International Workshop on Plasma Physics with Intense Laser and Heavy Ion Beams (HED@FAIR & WLIB 2018), Moscow, 28-29 May, 2018

40. Electron hole instability in magnetized semiconductor quantum plasma with spin polarization
ICPSA 2018, Zhengzhau University, China, 12-15 Oct., 2018
41. QED cascading in circularly polarized standing waves in electron-positron plasma
ICPSA 2018, Zhengzhau University, China, 12-15 Oct., 2018
42. Surface plasma wave in semiconductor quantum plasma with spin-up and spin-down exchange interaction
AAPPS-DPP, Kanazawa, Japan, 12-17 Nov., 2018
43. Combined study of self focusing and modulation instability of linearly polarized laser beam in high density quantum plasma
12th Int. Conf. Plasma Sci.& App. (ICPSA-2019), Lucknow, India, 11 – 14 Nov., 2019
44. Surface plasma wave in spin-polarized semiconductor quantum plasma
12th Int. Conf. Plasma Sci.& App. (ICPSA-2019), Lucknow, India, 11 – 14 Nov., 2019
45. Third harmonic in propagation of intense laser pulse in quantum magnetoplasma
12th Int. Conf. Plasma Sci.& App. (ICPSA-2019), Lucknow, India, 11 – 14 Nov., 2019
46. Excitation of Beam– Plasma Instability in Spin Polarized High Density Degenerate Plasma
41st International Hirschegg Online Workshop on Physics of High Energy Density in Matter, February 1-5, 2021
47. Excitation of Surface Plasma Wave in Spin-Polarized Semiconductor Plasma
6th International Conference on Nanoscience and Nanotechnology, February 01 – 03, 2021
48. Filamentation in spin polarized magnetized quantum plasma
Int. conf. on recent advances in fundamental and applied sciences (RAFAS), June 25 – 26, 2021
49. Radiation decay in spin-polarized quantum magnetoplasma
48th IEEE International Conference on Plasma Science (ICOPS), Sept. 12 – 16, 2021
50. SPW excitation in spin-polarized semiconductor quantum plasma
5th Asia-Pacific conference on plasma physics (AAPPS-DPP 2021), Sept. 26-Oct. 1, 2021
51. STSE – A new paradigm in science education
Virtual International Conference on 'Synergising Technology, Language, and Literature: Towards mapping new directions in Higher Education', Jan. 21 – 22, 2022
52. Propagation of electromagnetic wave in quantum dusty magnetoplasma with two different electron spin states
9th Int. Conf. on Phys. of Dusty Plasmas, May 23 – 27, 2022, Moscow (online)

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53. Ion-channel focussing in free electron lasers
National Laser Symp.-97, PRL, Ahmedabad, 10th-12th, Dec.,1997
54. Collective effects in FEL with ion channel guiding
National Laser Symp.-98, IIT Kanpur, 14th-16th, Dec., 1998
55. Circular wiggler FEL with ion channel guiding - generation of harmonics
National Laser Symp.- 99, Univ. of Hyderabad, 15th - 17th ,Dec., 1999
56. Plasma as a focussing device in free electron laser
Plasma-2000, Saha Inst. of Nuclear Physics, Calcutta, 5th-8th, Dec., 2000
57. Study of gain and harmonic generation in a circular wiggler FEL at upshifted ion channel betatron frequency
89th Indian Science Congress, Lucknow, 3rd – 5th Jan., 2001
58. Harmonic generation by propagation of an intense laser pulse in plasma
National Laser Symposium (NLS-2001), CAT, Indore, 19th-21st, Dec., 2001
59. Electric wakefield generation by propagation of an intense laser pulse in plasma
Plasma-2001, Centre for Plasma Physics, Guwahati, 17th-20th, Dec., 2001
60. Magnetic field generation by propagation of linearly polarized laser beam in magnetized plasma
Plasma 2002, Bhartiar Univ., Coimbatore, 16th-19th, Dec., 2002
61. FEL gain at upshifted ion-channel frequency and its harmonics
National Laser Symposium-2003, IIT Kharagpur, 22nd- 24th, Dec., 2003
62. Laser spot size evolution in a parabolic plasma channel
Plasma-2004, Bundelkhand University, 7th-10th, Dec., 2004
63. Nonparaxial, nonlinear propagation of an intense laser pulse in a plasma channel
Plasma-2004, Bundelkhand University, 7th-10th, Dec., 2004

64. Effects of relativistic and ponderomotive nonlinearities on propagation of a laser pulse through partially stripped plasma
Plasma-2004, Bundelkhand University, 7^{th}-10^{th}, Dec., 2004
65. Self channelling structures under the combined effect of electron cavitation and ion density perturbations
National Laser Symposium-2004, Bhabha Atomic Research Centre, 10^{th}-13^{th}, Jan., 2005
66. Effect of electron and ion density perturbations on laser propagation in plasma
National Laser Symposium-2004, Bhabha Atomic Research Centre, 10^{th}-13^{th}, Jan., 2005
67. Laser pulse modulational instability under combined effects of relativistic and ponderomotive nonlinearities
National Laser Symposium-2004, Bhabha Atomic Research Centre, 10^{th}-13^{th}, Jan., 2005
68. Propagation of linearly polarized laser beam in magnetized plasma
Orientation Programme, UGC-Academic Staff College, Lucknow University, Feb., 2005
69. Interaction of laser pulses with magnetized plasma
Plasma 2005, Cochin University, Dec., 2005
70. Effect of charge density fluctuation on propagation of laser pulses in a plasma channel
Plasma 2005, Cochin University, Dec., 2005
71. Stimulated Raman scattering of intense laser radiation in underdense plasma
Plasma 2005, Cochin University, Dec., 2005
72. Propagation of short laser pulses in a plasma channel
National Laser Symposium-2006, RR-CAT, Indore, Dec.,2006
73. Spot-size evolution in axially magnetized plasma
National Laser Symposium-2006, RR-CAT, Indore, Dec.,2006
74. Envelope evolution and modulation instability of a laser beam in partially stripped plasma
National Laser Symposium-2006, RR-CAT, Indore, Dec., 2006
75. Modulation instability of a laser beam in transversely magnetized plasma
Plasma 2006, MNIT Jaipur, 19^{th} – 22^{nd}, Dec., 2006
76. Wakefield generation in a plasma channel
Plasma 2006, MNIT Jaipur, 19^{th} – 22^{nd}, Dec., 2006
77. Stimulated Raman backscattering of short wavelength laser radiation in plasma
Plasma 2006, MNIT Jaipur, 19^{th} – 22^{nd}, Dec., 2006
78. High frequency oscillations in quantum plasma
Plasma 2008, Bhabha Atomic Research Centre, Dec., 2008
79. Science communication for the rural people : A survey
8^{th} Indian Science Communication Congress, 2008
80. Wave interactions with magnetized quantum plasma
Plasma 2009, Hamirpur, Dec. 2009
81. Dispersion of linear waves in magnetized quantum plasma
National Laser Symposium-2010, Bhabha Atomic Research Centre, Jan., 2010
82. Fundamental rights encompassing science journalism
9^{th} Indian Science Communication Congress, Dec., 2009
83. Ion acoustic waves in electron-positron-ion quantum magnetoplasma
Plasma 2010, IASST, Guwahati, 8^{th}-11^{th} Dec., 2010
84. Wakefields generation in magnetised quantum plasma
Plasma-2011, BIT, Patna, 20^{th}-23^{rd} Dec., 2011
85. ULF wave index and space weather study
Plasma-2011, BIT, Patna, 20^{th}-23^{rd} Dec., 2011
86. Maxwell formulation for equations of quantum plasma
PLASMA-2012, Pondicherry, 10^{th}-13^{th} Dec., 2012
87. Magnetic field generation by propagation of e.m. waves in magnetized quantum plasma
PLASMA-2012, Pondicherry, 10^{th}-13^{th} Dec., 2012
88. Ponderomotive acceleration in magnetized quantum plasma
PLASMA-2012, Pondicherry, 10^{th}-13^{th} Dec., 2012
89. Communication errors in transferring scientific information to regional languages
Indian Science Communication Congress, New Delhi, 18^{th}-21^{st} Dec., 2012
90. Whistle wave generation in magnetized quantum plasmas
COTII-2013, Lucknow, 16^{th} Feb., 2013
91. Dispersion of waves in quantum magnetized plasma

COTII-2013, Lucknow, 16th Feb., 2013

92. Electron acceleration by ponderomotive force in magnetised quantum plasma
PLASMA-2013, KIIT Univ., Bhuvneshwar, 3-6 Dec., 2013
93. Modulation instability in a plasma channel with wiggler magnetic field
PLASMA-2013, KIIT Univ., Bhuvneshwar,3-6 Dec., 2013
94. Second harmonic generation in high density quantum plasmas
DAE-BRNS, National Laser Symposium (NLS-23), Tirupati, 3rd -6th Dec., 2014
95. Shifted second harmonic backscattering of laser in magnetized quantum plasma
DAE-BRNS, National Laser Symposium (NLS-23), Tirupati, 3rd -6th Dec., 2014
96. Particle acceleration by whistler pulse in high density quantum plasma
Plasma-2014, Kottayam, 8th -11th Dec., 2014
97. Raman backscattering of laser in magnetized quantum plasma
Plasma-2014, Kottayam, 8th -11th Dec., 2014
98. Study of purpose, style and response of an emerging tool of science communication : Science Blogs
ISCC-2014, Delhi, 26th-28th Dec., 2014
99. Nonlinear propagation of whistler pulse in quantum plasma
Plasma-2015, SINP, Kolkata, 1st-4th Dec., 2015
100. Harmonic generation in high density plasma
Plasma-2015, SINP, Kolkata, 1st-4th Dec., 2015
101. Envelope evolution in propagation of intense laser beam in magnetized quantum plasma
24th DAE-BRNS National Laser Symposium,RRCAT, Indore, 2-5 Dec., 2015
102. Laser Wakefield Acceleration in Quantum Plasma Channel
COTII 2017, Lucknow, 3rd-4th March, 2017
103. Effect of wiggler field on second harmonic generation in quantum plasma
Nat. Conf. on Plasma Phys. and Nonlinear Dynamics,JIS Univ., Kolkata, 23rd-24th March, 2017
104. Propagation of electromagnetic wave in quantum dusty magnetoplasmawithtwodifferentelectron spin states
Plasma 2017, IPR, Gandhinagar, 7-10 November, 2017
105. Second harmonic generation by circularly polarized laser pulse with two different spin states in magnetized quantum plasma
DAE-BRNS National Laser Symposium, BARC, Mumbai, 20-23 December, 2017
106. Effect of spin polarization on electron acceleration in spin polarized dusty quantum magnetoplasma
NFP-PFRC Vision Meeting, Ahmedabad, 26-28 April, 2018
107. Circularly polarized modes in quantum dusty magnetoplasma with two spin states exchange interaction
Plasma – 2018, Delhi University, 4-7 Dec., 2018
108. Third harmonic of laser radiation in quantum magnetoplasma
DAE-BRNS NLS, RRCAT, Indore, 3-6 Dec., 2018
109. Beam–Plasma Instability in Spin Polarized High Density Degenerate Plasma
36th Nat. Symp. on plasma science and tech. (Plasma 2021), 13-15 Dec., 2021
110. Circularly Polarized Modes in Spin Polarized Magnetized Quantum Plasma with Dust Grains
Nat. conf. on plasma science and applications (PSA-2021), 20-21 Dec., 2021

e-content/ Online Learning Material Developed

	Nature of Activity	Module Details	Online Link	Year
1	Powerpoint	Sword of Light (An interactive presentation developed to teach about Laser and its applications)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336149463497784	2017
2	Powerpoint	Holography (A lecture to teach fundamentals of holography to postgraduate students)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336156456830418/	2007
3	Powerpoint	Laser Plasma Interaction (A lecture note to teach the theory and applications of laser beam	https://www.facebook.com/336104260168971/photos/a.336121800167217/336297623482968/	2018

		propagation in plasma)		
4	Powerpoint	Integrated Optics (A series of PowerPoint presentations for teaching Integrated Optics)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336421203470610/	2009
5	Powerpoint	Optics (A series of PowerPoint presentations for teaching optics based on undergraduate syllabus)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336793126766751	2010
6	Powerpoint	Plasma Physics (A series of PowerPoint presentations for understanding basic plasma physics)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336267566819307/	2011
7	Powerpoint	BahrtiyaVigyanVaibhavam (Science in Vedas) - A PowerPoint presentation for delivering scientific contents in Vedic literature.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336785880100809/	2011
8	Powerpoint	Vedas and Physics - A PowerPoint presentation for delivering Physics contents in Vedic literature.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336276853485045	2012
9	Powerpoint	Electromagnetic Theory – A series of PowerPoint presentations for understanding electromagnetic theory based on M.Sc. syllabus	https://www.facebook.com/336104260168971/photos/a.336121800167217/336792150100182/	2013
10	Powerpoint	Science in India (Modern India) - A PowerPoint presentation for understanding Indian contribution to science	https://www.facebook.com/336104260168971/photos/a.336121800167217/336428930136504/	2013
11	Powerpoint	Electrodynamics - A series of PowerPoint presentations for understanding electrodynamics based on M.Sc. syllabus.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336792656766798/	2013
12	Powerpoint	Science writing gets social - A presentation highlighting the social influence of science journalism.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336280843484646/	2014
13	Powerpoint	Scientific Writing - A lecture based on the book 'The craft of scientific writing' by Michael Alley, targeted for students of Science Communication (Postgraduate)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336150320164365/	2017
14	Powerpoint	Science and Human Rights - A review of provisions for science and scientists in UN charter and the Constitution of India	https://www.facebook.com/336104260168971/photos/a.336121800167217/336121576833906	2014
15	Powerpoint	Our Quantum World - A powerpoint presentation explaining the wave particle duality (based on undergraduate syllabus)	https://www.facebook.com/336104260168971/photos/a.336121800167217/336154360163961/	2015

16	Powerpoint	Quantum Plasma : A path towards Nanoplasmonics - A PowerPoint presentation for understanding the emerging field of quantum plasma (for pre-Ph.D. course).	https://www.facebook.com/336104260168971/photos/a.336121800167217/336282293484501/	2015
17	Powerpoint	Wakefield generation in interaction of laser pulses with quantum plasma - A review of wakefield generation in quantum plasma and using the field for particle acceleration (for pre Ph.D. course).	https://www.facebook.com/336104260168971/photos/a.336121800167217/336422946803769/	2016
18	Powerpoint	Science Communication : A path to better quality of life - A course material for teaching science communication to postgraduate classes.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336269663485764/	2016
19	Powerpoint	Blog as an emerging tool for Education - A lecture to explain how the blogs can be used to share knowledge and how can a teacher use to promote discussion among students and use it as problem solving tool.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336298236816240/	2017
20	Powerpoint	Waves and Fourier Transform - A lecture note to teach the use of Fourier transform in wave optics.	https://www.facebook.com/336104260168971/photos/a.336121800167217/336278926818171/	2017
21	Video Lecture	Rayleigh Scattering	https://www.facebook.com/336104260168971/videos/173269530388100	
22	Video Lecture	Basics of plasma physics	https://www.facebook.com/336104260168971/videos/2571173903096145	
23	Video Lecture	Advance plasma physics	https://www.facebook.com/336104260168971/videos/701879010554179	
24	Video Lecture	Radiation damping of an oscillatory discharge	https://www.facebook.com/336104260168971/videos/843005826198108	
25	Video Lecture	Polarimeters	https://www.facebook.com/336104260168971/videos/546729139555477	
26	Video Lecture	Jone's Matrices	https://www.facebook.com/336104260168971/videos/337765990516253	
27	Video Lecture	Rayleigh Scattering – A video lecture on Rayleigh scattering for postgraduate course.	https://www.youtube.com/watch?v=YBg1gVevGEw&t=23s	2020
28	Video Lecture	Physics at LHC and beyond – Part 1 – A video lecture for M.Sc. – IV Sem.	https://www.youtube.com/watch?v=f2Ua_NtZmO0&t=23s	2020

29	Video Lecture	Physics at LHC and beyond – Part 2 – A video lecture for M.Sc. – IV Sem.	https://www.youtube.com/watch?v=H5RUsLZAIhI&t=14s	2020
30	Video Lecture	Polarimetry – Video lecture covering optical activity, polarimetry and polarizers (B.Sc. – II Sem.)	https://www.youtube.com/watch?v=PCNhzx5K6Os&t=23s	2020
31	Video Lecture	Jone's Matrices - Video lecture covering matrices for polarized light, polarizers, etc. (B.Sc. – II Sem.)	https://www.youtube.com/watch?v=DPsAu-QQE1w&t=33s	2020
32	Video Lecture	Radiation Reaction - Video lecture for M.Sc. – II Sem. students	https://www.youtube.com/watch?v=gjoK10MS39Y&t=26s	2020
33	Video Lecture	Gamma Ray Emission by Petawatt Laser – Video lecture showing radiation reaction mechanism in petawatt lasers	https://www.youtube.com/watch?v=UN1c_CMJxT0	2020
34	Video lecture	International Conference on Plasma Science and Applications - 2019	https://www.youtube.com/watch?v=EHZt8BWaAd0&t=39s	2020
35	Video lecture	Video lecture on fundamentals of Laser for undergraduate students (B.Sc. – II Sem.)	https://www.youtube.com/watch?v=r7tpuBYa11M	2020
36	Video lecture	Video lecture on Quantum Plasma	https://www.youtube.com/watch?v=aaQ2LDS-IH8&t=777s	2020
37	Video lecture	Video lecture on Helmholtz Coils experiment (B.Sc. – III Sem.)	https://www.youtube.com/watch?v=Sel2nPAAbAg&t=7s	2020
38	Video lecture	Video lecture on Common Power Supply experiment (B.Sc. – III Sem.)	https://www.youtube.com/watch?v=Xoi5fvaikmw&t=5s	2020
39	Video Lecture	Video lecture on Ballistic Galvanometer (B.Sc. – III Sem.)	https://www.youtube.com/watch?v=KYysojiYNlo&t=2s	2020
40	Video Lecture	Video lecture on Plasma in Medicine - 2	https://www.youtube.com/watch?v=NfaYXhcoZyY&t=133s	2020
41	Video lecture	Video lecture on Plasma in Medicine - 1	https://www.youtube.com/watch?v=L1UyjJWOX1o&t=6s	2020
42	Video lecture	Video lecture on Plasma for Future - 2	https://www.youtube.com/watch?v=Bxj-5rYSGuk&t=64s	2020
43	Video Lecture	Video lecture on Plasma for Future - 1	https://www.youtube.com/watch?v=PE5sUdmhEaQ&t=32s	2020
44	Video Lecture	Video on Modulation and Demodulation (M.Sc. – II Sem.)	https://www.youtube.com/watch?v=MHN4oSWWaiw&t=917s	2020
45	Video lecture	Video on Basic Plasma Physics – 2	https://www.youtube.com/watch?v=eN-Zz44zijk&t=643s	2020
46	Video lecture	Video on Basic Plasma Physics – 1	https://www.youtube.com/watch?v=x5e0I0SWbQw&t=3s	2020
47	Video lecture	Video on Journey from Philosophy to Physics	https://www.youtube.com/watch?v=9BPImorEk5c&t=51s	2020

48	Video lecture	Video on Science in Ancient India	https://www.youtube.com/watch?v=vG547A-XXWs	2020
49	Video Lecture	Video on Polarization (Matrix method) (B.Sc. – II Sem)	https://www.youtube.com/watch?v=28rYhhsp3vM&t=7s	2020
50	Video Lecture	Video on Multipole Expansion (M.Sc. – II Sem.)	https://www.youtube.com/watch?v=kAounTwcwe8&t=57s	2020
51	Video lecture	Video on Science and Human Rights	https://www.youtube.com/watch?v=tbPMPc733zw&t=8s	2020
52	Video lecture	Video on Blog – A self evolving means of education	https://www.youtube.com/watch?v=mlV6CRd__lI&t=9s	2020
53	Video Lecture	Video on Sterilization by Plasma	https://www.youtube.com/watch?v=KopfYYTVW-s&t=9s	2020
54	Video Lecture	Video on Fabry – Perot Interferometer (B.Sc. – II Sem.)	https://www.youtube.com/watch?v=8MGU5fT8KIs&t=6s	2020
55	Video lecture	Video on Petawatt Lasers	https://www.youtube.com/watch?v=sXcLBMXCaRU	2020
56	Video lecture	Video on Michelson Interferometer (B.Sc. – II Sem.)	https://www.youtube.com/watch?v=P8qCHiE4enQ&t=5s	2020
57	Video lecture	Video on Diffraction Grating (B.Sc. and M.Sc.)	https://www.youtube.com/watch?v=kNJ7wCNLrBQ&t=225s	2020
58	Online Study Material	Notes on Fundamentals of Plasma Physics (M.Sc. – IV Sem.)	https://lkouniv.ac.in/site/writereaddata/siteContent/20200324112607 5007puneet_kumar_plasma.pdf	2020
59	Online Study Material	Notes on Polarization (Matrix Mthod) (B.Sc. – II Sem.)	https://lkouniv.ac.in/site/writereaddata/siteContent/20200324184124 5730punit_kumar_Matrix_method.pdf	2020
60	Online Study Material	Notes on Rayleigh Scattering (M.Sc. – II Sem.)	https://lkouniv.ac.in/site/writereaddata/siteContent/20200328145707 1386punit_kumar_Rayleigh_Scattering.pdf	2020
61	Online Study Material	Notes on Polarimetry (B.Sc. – II Sem.)	https://lkouniv.ac.in/site/writereaddata/siteContent/20200403225057 1287punit_phy_Polarimetry.pdf	2020
62	Online Study Material	Notes on Light Sources (B.Sc. – II Sem.)	https://lkouniv.ac.in/site/writereaddata/siteContent/20200418155145 1075punit_kumar_phy_Light_Sources.pdf	2020
63	Video lecture	Video lecture on PN-Junction (B.Sc. – III Sem.)	https://www.youtube.com/watch?v=sztNlnHruMI&t=19s	2020
64	Video lecture	Video lecture on Interference – 1 (B.Sc. – II Sem) covering coherence, coherent sources and Young's double slit experiment.	https://www.youtube.com/watch?v=_VNv7r3kCiU&t=7s	2020
65	Video lecture	PNP Transistor Characterstics	https://www.youtube.com/watch?v=JAUcvnUTNcc&t=4s	2021
66	Video lecture	Interference of Light - 2	https://www.youtube.com/watch?v=jlw4ltoprmA	2021
67	Video lecture	Diffraction of Light - 2	https://www.youtube.com/watch?v=QJ5fJY8hMRg&t=12s	2021
68	Video lecture	Propagation of electromagnetic waves in free space	https://www.youtube.com/watch?v=AbBtIDm8XUM&t=54s	2021
69	Video lecture	Diffraction of Light - 1	https://www.youtube.com/watch?v=UMWhomH5vPU&t=18s	2021
70	Video lecture	Polarization of Light (Part - 1)	https://www.youtube.com/watch?v=6ezDn2cxZ9A&t=22s	2021
71	Video lecture	Propagation of electromagnetic waves in non-conducting medium (Isotropic Dielectric)	https://www.youtube.com/watch?v=roNnW9FySnI&t=176s	2021

72	Video lecture	Polarization of Light (Part - 2)	https://www.youtube.com/watch?v=1LmtQQT6dUM&t=3s	2021
73	Video lecture	Propagation of electromagnetic waves in conducting medium	https://www.youtube.com/watch?v=0FLzaD-mKSw&t=144s	2021
74	Video lecture	Propagation of electromagnetic waves in Ionized Gases	https://www.youtube.com/watch?v=Eukn7-aBHWY&t=521s	2021
75	Video lecture	Reflection and refraction of electromagnetic waves	https://www.youtube.com/watch?v=ABTkQAf2pZo&t=242s	2021
76	Video lecture	Polarization of electromagnetic waves	https://www.youtube.com/watch?v=aA6BxEOqdao	2021
77	Video lecture	Dispersion of electromagnetic waves	https://www.youtube.com/watch?v=_K9BsI4aQsc&t=238s	2021
78	Video lecture	Total Internal Reflection	https://www.youtube.com/watch?v=HfKwDhXQAPk&t=75s	2021
79	Video lecture	Dispersion of electromagnetic waves – II	https://www.youtube.com/watch?v=rAjViSq0aek&t=25s	2021
80	Video lecture	Rectangular Waveguides	https://www.youtube.com/watch?v=y_oYH8vDDMw&t=16s	2021
81	Video lecture	Circular Waveguides	https://www.youtube.com/watch?v=CYQmAiCVzxs&t=17s	2021
82	Video lecture	Waveguides	https://www.youtube.com/watch?v=DiQ896gxldo&t=463s	2021
83	Video lecture	Cavity Resonator	https://www.youtube.com/watch?v=7MccdPCl7v4&t=34s	2021
84	Video lecture	Radiation from an Electric Dipole	https://www.youtube.com/watch?v=KPKD8Qh4HEk&t=56s	2021
85	Video lecture	Sir C V Raman - A physicist who created a revolution	https://www.youtube.com/watch?v=vAbljv5lMbE&t=27s	2021
86	Video lecture	Science, Technology and Innovation	https://www.youtube.com/watch?v=mLdPnONHCoA&t=14s	2021
87	Video lecture	Communicating Through Light	https://www.youtube.com/watch?v=o0gdSFlSGzk&t=19s	2021
88	Video lecture	Science Communication	https://www.youtube.com/watch?v=lQhI637bALI&t=21s	2021
89	Video lecture	Radiation due to non – relativistic charges	https://www.youtube.com/watch?v=Xw9rS90RehI&t=1107s	2021
90	Video lecture	Electric and magnetic fields of a charge in uniform rectilinear motion	https://www.youtube.com/watch?v=2xl5lKva1CA&t=572s	2021
91	Video lecture	Radiation due to relativistic charges	https://www.youtube.com/watch?v=bO0ZRe1-c74&t=24s	2021
92	Video lecture	Linear Vs Circular Particle Accelerators	https://www.youtube.com/watch?v=uqDaQKVkfsA&t=97s	2021
93	Video lecture	Interference of Light (Part – 3)	https://www.youtube.com/watch?v=pSm6lnc62l8&t=56s	2021
94	Video lecture	Thomson Scattering (Scattering by free electrons)	https://www.youtube.com/watch?v=EOhIDey1QVs&t=38s	2021
95	Video lecture	Rayleigh Scattering (Scattering by bound electrons)	https://www.youtube.com/watch?v=eiSI_HGnyZA	2021
96	Video lecture	Nuclear Fusion	https://www.youtube.com/watch?v=ic8EO_vnzL4&t=16s	2021

1.	Visiting Faculty	Inst. of Mass Comm. In Science & Technology, Lucknow since 2007
2.	Relevance of communication between scientists and science communicators	8th Indian Science Communication Congress, 2008
3.	Research prospects in science communication	Workshop for science writers, Vigyan Parishad, Prayag, 16th -17th, March, 2009
4.	Lasers in physics lectures and demonstrations – a brief review	6th International conference on Hands on Science, Ahmedabad, 27th-31st,Oct., 2009
5.	Physics of Toys	6th International conference on Hands on Science, Ahmedabad, 27th-31st,Oct., 2009
6.	Science Blogs as a tool of science communication	9th Indian Science Communication Congress, 2009
7.	Use of statistical information by Indian journalists : An analysis of articles on scientific research in vernacular press	11th International PCST Conference, New Delhi, 6th-10th, Dec., 2010
8.	Science in vernacular press-a study conducted in Lucknow (India)	12th International PCST conference, Florence, Italy18th-20th, April, 2012
9.	Gender issues in science - a case study of Lucknow (India)	12th International PCST conference, Florence, Italy18th-20th, April, 2012
10.	Science Communication In The Indian Democracy During Present Industrial Revolution	Indian Science Communication Congress, New Delhi, 18th-21st, Dec., 2012
11.	Science Communication In a Developing Democratic Economy – India	COTII-2013, Lucknow,16thFeb., 2013
12.	Communication : A driver for Innovation	COTII-2013, Lucknow, 16thFeb., 2013
13.	Study of purpose, style and response of an emerging tool of science communication : Science Blogs	ISCC-2014, Delhi,26th-28th Dec., 2014
14.	Societal perception of a scientist	India Int. Science Festival (IISF 2018), 5-8 Oct., 2018
15.	Role of media in communicating science	Media Mahotsav, Bhopal, 22-23 Feb., 2019

Science Education

1. Wrote a chapter "Blogs : A self-evolving means of education" for the book 'Innovative Learning Strategies' published by ABH Publishing, ISBN-978-81-313-1245-2.
2. Presented a paper "Information and communication technology in education"- Int. Seminar on Innovative practices in education, 18th-19th, June, 2011, Lucknow.
3. Delivered a talk "Blogs : A self-evolving means of education" at Academic Staff College, Lucknow University.

Extension Activities

(a) Have authored many articles on science (**about 78**) for leading periodicals of the country (including Science Reporter, Kurukshetra, Yojana, Employment News, etc.).
(b) Have given lectures on topics related to science and also on teaching of science.
(c) Have been an active member of various socio-cultural organisations in and outside the University.
(d) Participated and won prizes in Debates and Dramas (Both in Hindi as well as in English) at school and inter-school levels.
(e) Have given various programmes on All India Radio and Doordarshan.
(f) Hold the honorary position of State Representative for periodical "Student Today" being published from New Delhi from 1999 to 2003.
(g) Have authored a chapter on "Vigyan Sanchar mein Shodh Sambhavnayein" for a book on science communication being published by DST.

(Dr. Punit Kumar)