Curriculum Vitae



Dr. Ashish Varma Assistant Professor Department of Physics Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, UP-221304, India <u>E-mail: varmaashish331@gmail.com,</u> Phone No. +918931977295 DoB: 18.07.1995

RESEARCH INTEREST

Electron Bernstein wave, Lower Hybrid wave, Magnetosonic wave, Electron Acceleration, Kinetic Theory, Terahertz generation using laser-plasma interaction, Particle acceleration, Nanoclustered Plasma, Electron Heating, Laser Nanoparticles Interaction, Carbon Nanotube.

EDUCATION

2022	Ph.D., University of Allahabad, India <i>Thesis Title:</i> Electron Bernstein waves in non-Maxwellian plasma embedded with cluster	
2017	Master of Science (Physics), University of Allahabad, India	
	CGPA (% Marks):	7.79/10 (77.90%)
	Division:	First
	Dissertation: Thermal Conductivity of Nickel EG based Nano Fluids	
	Committee:	Prof. Raja Ram Yadav
2015	Bachelor of Science (B.Sc.), University of Allahabad, India	
	Major Subjects:	Physics, Chemistry and Mathematics
	Division:	First division (65.19%)

PROFESSIONAL EXPERIENCE

 05/08/2021- till date Assistant Professor, Department of Physics, Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, India
 23/01/19 to 22/01/2021 CSIR-UGC JRF at Department of Physics, University of Allahabad,

India

23/01/21 to 04/08/2021 CSIR-UGC SRF at Department of Physics, University of Allahabad, India

AWARDS / ACHIEVEMENTS

• Junior Research Fellowship (NET+JRF) conducted by Council of Scientific and Industrial Research (CSIR), Ministry of Human Resource Development, India, (December 2016).

ADMINISTRATIVE RESPONSIBILITIES

- Member: ICT cell, at Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, India, Aug 2021 till date
- Member: IQAC, at Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, India, Sept 2021 till date
- Member organizer to exam NGPE, at Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, India, Sept 2021 till date
- Member NAAC Committee, at Kashi Naresh Govt. P. G. College, Gyanpur Bhadohi, India, July 2022 - till date

RESEARCH SKILLS

- Mathematical skills to solve analytical problems
- Numerical techniques like finite difference method, finite element method and rungekutta method to solve ordinary and partial differential equations using MATLAB, C++ and their effective use in analysis the mathematical complexities
- Knowledge with Linux, Mac and Window
- Writing code in MATLAB, C++, Python

SELECTED RESEARCH WORK

- Kinetinc Theory: Nonlocal Theory for excitation, electron Beam, Maxwellian distribution, Non-Maxwellian distribution, Growth rate, Cerenkov and slow cyclotron interactions.
- Electron Bernstein wave: Laser plasma interaction, Beat wave mechanism, Pondermotive force, Homogeneous and inhomogeneous magnetized plasma

THz Source

• **Tunnel ionization:** Femtosecond laser, numerical study of spatial distribution of

plasma density, study the effect of laser phase envelope on ionization process, the effect of inhomogeneity of plasma density on frequency, power and efficiency of emitted radiation. Study the effect of applied dc magnetic field in tuning the frequency and power of emitted radiation.

• **Optical Rectification in plasma:** Study the effect of laser profiles and beam width on field amplitude, efficiency and direction of the emission of terahertz radiations.

PEER-REVIEWED SCI JOURNAL PUBLICATIONS

PUBLISHED

- A Kumar, A Kumar, S. P. Mishra, M. K. Yadav, and Ashish Varma, "Plasma wave aided heating of collisional nanocluster plasma by nonlinear interaction of two high power laser beams" Optical and Ouantum Electronics (2022), 54 753.
- S Babu, A Kumar, R Jeet, A Kumar, and Ashish Varma*, "Decay instability of X-mode laser into upper hybrid and electron Bernstein waves in a plasma" <u>Optical and</u> <u>Ouantum Electronics</u> (2022), 54, 710.
- 3. Ashish Varma and Asheel Kumar, "Electron Bernstein wave aided heating of collisional nanocluster plasma by nonlinear interactions of two super-Gaussian laser beams" LASER PHYSICS (2022), 32 016001
- A Kumar, A Kumar, and Ashish Varma, "Excitation of electron Bernstein wave by beating of two cosh-Gaussian laser beams in a collisional plasma" LASER PHYSICS (2021), 31 106001
- Ashish Varma^{*}, A Kumar, "Electron Bernstein wave aided beat wave of Hermitecosh-Gaussian laser beam absorption in a collisional nanocluster plasma" <u>Optik -</u> <u>International Journal for Light and Electron Optics</u>, (2021), 254, 167702.
- S Babu, A Kumar, R Jeet, A Kumar, and Ashish Varma*, "Stimulated Raman Scattering of X-Mode Laser in a Plasma Channel" Laser and Particle Beams (2021), 10, 9919467.
- Ashish Varma^{*}, A Kumar, "Electron Bernstein wave excitation by beating of two copropagating super-Gaussian laser beam in a collisional nanocluster plasma" <u>Optik</u>
 <u>- International Journal for Light and Electron Optics</u>, (2021), 240, 166872.
- 8. R Jeet, A Kumar, A Kumar, S Babu and Ashish Varma^{*}, "Acceleration of electrons

by a lower hybrid wave in a magnetic mirror" **Journal of the Korean Physical Society volume**, (2021) 78, pages1179–1184.

- Ashish Varma^{*}, A Kumar, and A Kumar, "Nonlocal Theory of Excitation of Electron Bernstein Waves by a Relativistic Electron Beam in Plasma with Loss-Cone Distribution of Electron" <u>Brazilian Journal of Physics</u> (2021), 51, pages 661–666.
- Ashish Varma^{*}, and A Kumar, "Excitation of lower hybrid wave by counterpropagating cosh Gaussian laser beams in a magnetized plasma" <u>OPTIK</u> (2021), 231, 166326.
- 11. Ashish Varma^{*}, and A Kumar, "Electron Bernstein wave excitation and heating by nonlinear interactions of Laguerre and Hermite Gaussian laser beams in a magnetized plasma" <u>OPTIK</u> (2021), 228, 166212.
- S Yadav, P Chaudhary, K N Uttam, Ashish Varma^{*}, M Vashishtha, and B C Yadav,
 "Quasimonoenergic collimated electrons from the ionization of low-density gases by a chirped intense Gaussian laser pulse", <u>Nanotechnology</u> (2019), 30, 295501.

Book Chapters

 S. P. Mishra and Ashish Varma, "Heating of Collisional Nanocluster Plasma: Role of beam Decentred parameter" Optical Recent Development and Techniques in Physical SciencesPublisher: Weser Books (2022), DOI: 10.33545/wb.book.260, ISBN: 978-3-96492-444-5.

CONFERENCES/ SCHOOL/ WORKSHOP

- Ashish Varma^{*}, S. P. Mishra, A. Kumar, and A Kumar, "Nonlinear Absorption of High Power Cosh-Gaussian Laser Beam in Plasma Embedded with Nanocluster" 10th NATIONAL CONFERENCE ON NANOSCIENCE AND INSTRUMENTATIONTECHNOLOGY (July 9-10, 2022).
- Ashish Varma^{*}, and A Kumar, "Electron Bernstein wave excitation by beating of two laser beams in plasma embedded with cluster" 2nd International Conference on Plasma Theory and Simulation 20 22 June, 2022 Department of Physics, University of Lucknow, India.
- 3. Ashish Varma^{*}, and A Kumar, "Electron Bernstein wave assisted laser beat wave heating of collisional nanocluster plasma" ICMSS-21 (international Conference), Organized by Maharishi School of Science Maharishi University of Information

Technology, Sept 2021.

- Ashish Varma^{*}, and A Kumar, "Electron Bernstein wave excitation by beating of two laser beams in plasma" RAFAS-21 (international Conference), Organized by Lovely Professional University, Punjab, 25-26 June 2021.
- Ashish Varma^{*}, A Kumar and A Kumar, "Non local theory of excitation of electron Bernstein wave in magnetized beam plasma system" 34nd National Symposium on Plasma Science & Technology (PLASMA 2019), Organized by VIT, Chennai, India, 3-6 Dec 2019.
- Ashish Varma^{*}, and A Kumar, "Non local theory of excitation of electron Bernstein waves by a relativistic electron Beam in a plasma with loss cone velocity distribution function" ICPSA-19 (international Conference), Organized by University of Lucknow, India, 11-14 November 2019.
- Attend the SERB School on "DST-SERB School on Ultrahigh Intensity Laser Produced Plasmas : Physics and Applications" organized by RRCAT, Indore -452013 MP India Jan 7-25 2019.
- Ashish Varma, Abhishek Shukla, Sweta Sharma, Abhi Sarika Bharti, Kamlesh Pandey, R.Gopal and K. N. Uttam, "SYNTHESIS AND CHARACTERISATION OF MANGANESE FERRITE NANOPARTICLES" MMISLIBS-2018, organized by Department of Physics, University of Allahabad, Allahabad, India.

Project /Course works/ Workshops:

- MSc Physics DISSERTATION on "Thermal Conductivity of Nickel EG based Nano Fluids" under the guidance of Prof. Raja Ram Yadav, Dept of Physics, University of Allahabad
- Three days National workshop on "Inspiration for Research: YOU CAN" at MNNIT ,Allahabad.
- After M.Sc Physics (Jul 2017 to Oct 2018) worked on "Synthesis and characterization of cobalt, manganese, nickel and copper ferrite nanoparticles by co-precipitation and hydrothermal methods" under the guidance of Dr. K N Uttam at Physics Department, University of Allahabad.
- One day WOKSHOP on Best Practice in Scientific Publishing, December 20, 2018 organized by J.K. Institute of Applied Physics and Technology, UoA, Prayagraj.

Academic References

Prof. Asheel Kumar Professor Department of Physics University of Allahabad Allahabad, India E-mail:<u>asheel2002@yahoo.co.in</u>

Prof. K. N. Uttam Professor Department of Physics University of Allahabad Allahabad, India E-mail:<u>kailash.uttam@rediffmail.com</u>