

DR. SUJEET KUMAR AGARWAL

Associate Professor (Physics)

Department of Applied Sciences & Humanities
Kamla Nehru Institute of Technology,
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Cell Phone: +91 8840542850, +91 9473870963
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sujeetons@gmail.com

- Academic Experience** : More than 13 years
Postdoctoral Research : **National Cheng Kung University, Tainan, TAIWAN**
Highest Degree : PhD (Physics)
Research Interests : Basic & Applied Sciences, Plasma Physics, Electromagnetic propagation, Dusty plasmas, Interstellar matter, Nano-sciences and Energy studies.
Projects Guided : Green Car Project, Unmanned Aerial Surveillance, Humanoid (robot)
Fellowships : JRF (DST Project), SRF (DST Project, ISRO Project), Project Scientist (Ramanna Fellowship Program), Postdoctoral Fellowship (NCKU Taiwan)
Awards & Honors : Faculty Excellence Award (2012), Best Faculty Award (2013)
Publications : Research papers in high impact journals

Education:

- **PhD**, Physics: University of Lucknow, Lucknow India 2008
TITLE: SELF-FOCUSING/DEFOCUSING OF EM WAVES IN IONOSPHERIC PLASMA AND ITS EFFECTS ON NONLINEAR PROCESSES
- **MSc**, Physics: CSJM Kanpur University, India; First class 2003
- **BSc**, PCM: University of Lucknow, Lucknow India; First class 1993
- **CSIR-NET: Physical Sciences, 2003**



Teaching & Research Positions Held:

- ASSOCIATE PROFESSOR, Department of Applied Sciences & Humanities KNIT Sultanpur July 2018 – to date
- ASSISTANT PROFESSOR, Faculty of Engineering, Lucknow University Aug 2017 – June 2018
- ASSOCIATE PROFESSOR, Ansal Technical Campus, Lucknow, India Aug 2013 – Aug 2017
- ASSISTANT PROFESSOR, Ansal Technical Campus, Lucknow, India Jun 2011 – Jul 2013
- SENIOR RESEARCH FELLOW, ISRO Project (Govt. of India), Disha Institute of Management and Technology, Raipur (C.G.) May 2010 - Jun 2011
- POSTDOCTORAL FELLOW, Department of Physics, **National Cheng Kung University, Tainan, TAIWAN** Aug 2008 - Mar 2010
- PROJECT SCIENTIST, Ramanna Fellowship Program, Department of Education Building, University of Lucknow, Lucknow India Jan 2007 - Jul 2008
- SENIOR RESEARCH FELLOW, DST Project (Govt. of India), Department of Education Building, University of Lucknow, Lucknow India Sep 2006 - Dec 2006
- JUNIOR RESEARCH FELLOW, DST Project (Govt. of India), Department of Education Building, University of Lucknow, Lucknow India Oct 2005 - Sep 2006
- LECTURER, PMS Degree College, University of Lucknow, Lucknow India Jul 2004 - Aug 2005

Administrative Positions:

- DEAN-INTERNATIONAL PROGRAMS, Ansal Technical Campus, Lucknow (SEPT 2014-AUG 2017)
- HEAD-DEPARTMENT OF APPLIED SCIENCES & HUMANITIES, Ansal Technical Campus, Lucknow (SEPT 2014-AUG 2017)

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- OFFICER-IN-CHARGE, LEGAL AFFAIRS, KNIT Sultanpur (Since AUG 2019)
- DEPUTY OFFICER-IN-CHARGE, LIBRARY, KNIT Sultanpur (Since Aug 2019)

Real Time Projects Guided:

- **GREEN CAR PROJECT:** The aim of the project has been to develop a prototype new age eco-friendly car, specifically powered by solar energy. The front wheels of the car are moved by an electric motor run by a battery bank which is charged primarily through solar energy and alternatively by 220V AC input. After successful completion of the project, work orders were received by the institute for the commercial production of the solar golf carts.



- **ROBOTICS:** The Humanoid robot project funded by Ansal Technical Campus, Lucknow has been successfully led to completion. Humanoid has been an interactive robot which could find its path, speak the information queried through touch screen and display its vision at a remote station.
- **UNMANNED AERIAL SURVEILLANCE:** The Unmanned Aerial Surveillance project funded by Ansal Technical Campus, Lucknow has been successfully led to completion. The project involved live video streaming of the aerial view from remotely controlled quadcopter to ground station.

Students were involved at all the stages of the abovementioned projects, from proposal preparation to making and completion, to give them a hands-on industry experience and to motivate them for technological innovations.

Ph.D. Students

- VIDHU TRIPATHI: Pursuing since July 2020, KNIT Sultanpur, AKTU Lucknow.
Topic: *Kinetics of Dusty Plasma of Planets*

Academic Responsibilities

- Member, Skill Development Cell, KNIT Sultanpur (Aug 2018)

Reviewer

- *IEEE Transactions on Plasma Science*, Institute of Electrical and Electronics Engineers Inc. USA (Q2 Journal)
- *Physica Scripta*, IOP Publishing UK (Q2 Journal)
- *Physics of Plasmas*, American Institute of Physics USA (Q2 Journal)

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- *Nuclear Fusion*, IOP Publishing UK (**Q1** Journal)
- *Plasma Physics and Controlled Fusion*, IOP Publishing UK (**Q1** Journal)
- *Journal of Optics*, IOP Publishing UK (**Q1** Journal)

Awards & Honors:

- FACULTY EXCELLENCE AWARD (2012), Ansal Technical Campus, Lucknow
- BEST FACULTY AWARD (2013), Ansal Technical Campus, Lucknow

Short Term Training Programs/Faculty Development Programs attended

- One week AICTE Training and Learning (ATAL) Academy Online Elementary FDP on “*Artificial Intelligence and Green Power Technology*”, June 14-18, 2021
- One week Short Term Course on “Essentials of Teaching-Learning Process” February 17-22, 2020
- One week Short Term Course on “Operation Research: Techniques and Applications” February 03-07, 2020
- One week Faculty Development Program on “ICT Tools for Teaching, Learning Process & Institutes” January 13-17, 2020
- Two weeks Faculty Development Program on “Lean & Six Sigma” November 20-December 01, 2019
- One week Short Term Course on “Practical Aspects of Optimization (PAO-2019) August 01-05, 2019
- One week Short Term Course on “Numerical Techniques for Scientific Computations (NTSC-2019)”, July 15-19, 2019
- One week Short Term Course on “Emerging Power Technologies and Management (EPTM-2019)” April 08-13, 2019
- One week Faculty Development Program on “ICT in Advanced Teaching and Learning for Academicians: A Gateway to Technical Excellence” March 26-30, 2019

Conference Organized/Member

- ICACSE-2021, 3rd International Conference on “Advanced Computing and Software Engineering”, February 19-20, 2021 (Member Organizing Committee)
- ICACSE-2019, 2nd International Conference on “Advanced Computing and Software Engineering”, February 08-09, 2019 (Member Organizing Committee)
- One week Short Term Course on “Operation Research: Techniques and Applications” February 03-07, 2020 (Convener)
- NTSC-2019, One week Short Term Course on “Numerical Techniques for Scientific Computations”, July 15-19, 2019 (Convener)
- POLYCHAR-16, WORLD FORUM ON ADVANCED MATERIALS: Feb 17-21, 2008, Lucknow University INDIA, (Member Organizing Committee)
- SELF-FOCUSING WORKSHOP: Nov 19-25, 2007, University of Lucknow, INDIA,
- ANNUAL GENERAL MEETING, MATERIALS RESEARCH SOCIETY OF INDIA: Feb 13-15, 2006, Lucknow University INDIA (Member Organizing Committee)

Invited Talk/Expert Lecture

- NATIONAL CONFERENCE ON COMPUTATIONAL AND CHARACTERIZATION TECHNIQUES IN ENGINEERING AND SCIENCES (06-07 September 2019), REC Ambedkar Nagar UP India, *Two Stream Instability in Plasmas*.
- PSROC 2010: Feb 02-04, 2010, National Cheng Kung University, **TAIWAN**, *Kelvin - Helmholtz Instability in a Plasma*.
- CONFERENCE ON COMPUTATIONAL PHYSICS, CCP 2009: Dec 15-19, 2009, National Cheng Kung University,

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TAIWAN, *Fractional Power Law of Plasma Transport.*

- PSROC 2009: Jan 19-21, 2009, National Changhua University of Education, Changhua **TAIWAN**, *Viscoresistive Two Fluid Plasmas.*
- SELF-FOCUSING WORKSHOP: Nov 19-25, 2007, University of Lucknow, INDIA, *Laser Plasma Interactions, Self focusing in the ionosphere.*

Conferences/Seminars: Presentations

- INTERNATIONAL SYMPOSIUM ON ADVANCES IN FUNCTIONAL & BIOLOGICAL MATERIALS (ISAFBM-2019), February 28, 2019, *Enhancement of electron density in complex plasmas by dust suspension.*
- ASSESSING THE IMPACT OF AEROSOLS AND CHANGING CLIMATE ON MONSOON AND EXTREME EVENTS: 12-15 Jan 2015, Ansal University, Gurgaon, India: *Association between pollutants and their interaction with meteorological factors in context of health effects.*
- NATIONAL SYMPOSIUM ON ADVANCE IN MATERIAL SCIENCE: Mar 17-19, 2005, Department of Physics, D.D.U. Gorakhpur University Gorakhpur INDIA, *Phonon Dispersion in Polymers.*
- NATIONAL SYMPOSIUM ON ATOMIC, MOLECULAR STRUCTURE, INTERACTIONS AND LASER SPECTROSCOPY: Mar 14-15, 2004, Department of Physics, BHU Varanasi INDIA, *Vibrational Dynamics of Polymers.*

Research Publications:

1. **S. K. Agarwal** and M. S. Sodha, (2021) *Modification of Martian Ionosphere*; IEEE Transactions on Plasma Science **49** (2), 871-877 (2021) DOI: 10.1109/TPS.2021.3051205
2. **S. K. Agarwal** and A. Dixit, *Nonlinear Propagation Parameters of Ionosphere for E.M. Waves of Moderate Irradiance*; Asian Journal of Physics **30** (1) (2021)
3. M. S. Sodha and **S. K. Agarwal**, *Application of Boltzmann's transfer equation to nonlinear propagation of EM waves in ionospheric plasma*; Physics of Plasmas **26**, 102902 (2019); <https://doi.org/10.1063/1.5097325>
4. M. S. Sodha, Gyan Prakash and **S. K. Agarwal**, (2019) *Production of artificial conducting regions in the atmosphere*, IEEE Transactions on Plasma Science **47** (11), 5113 DOI: 10.1109/TPS.2019.2941552
5. M. S. Sodha and **S. K. Agarwal**, (2018) Generalized expression for ambipolar diffusion in plasmas, Bulletin of the Indian Association of Physics Teachers **10** (8), 214-218
6. M. S. Sodha and **S. K. Agarwal**, *Nonlinear interaction of an intense radio wave with ionospheric D/E layer plasma*, Physics of Plasmas **25**, 052903 (2018)
7. **S. K. Agarwal** and M. S. Sodha, *Analysis of energy distribution of photoelectrons: comparison with experiment for molybdenum*; Proc. Natl. Acad. Sci., India, Sect. A Phys. Sci., **84**, 577 (2014) DOI 10.1007/s40010-014-0168-y.
8. J. Y. Hsu, KaiBang Wu, **S. K. Agarwal** and C. M. Ryu, *The $B^{-3/2}$ diffusion in magnetized plasma*; Physics of Plasmas **20**, 062302 (2013) [Impact factor 2.147, ISSN 1089-7674]
9. **S. Agarwal**, S. Misra, S.K. Mishra, and M.S. Sodha, *Three region model and quantum enhancement of thermionic and photoelectric electron emission from negatively charged metallic surfaces*; Can. J. Phys. **90**: 265–275 (2012). [Impact factor 0.857]
10. M. S. Sodha, A. Dixit and **S. K. Agarwal**, *Electric field emission of electrons from spherical metallic dust particles*; Canadian Journal of Physics **87**, 175-178 (2009) [Impact factor 0.676]

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11. M. S. Sodha, S. K. Mishra and **S. K. Agarwal**, *Non-linear propagation, self modulation and Faraday rotation of electromagnetic beams in the ionosphere*; IEEE Transactions on Plasma Science **37**(2), 375-386 (2009) [Impact factor 1.18]
12. M. S. Sodha, A. Sharma and **S. K. Agarwal**, *A condition for simultaneous propagation of coaxial Gaussian electromagnetic beams in a plasma, without convergence or divergence*; J. Plasma Phys. **74**, part 3, 293-299 (2008) [Impact factor 0.579]
13. **S. K. Agarwal** and A. Sharma, *Interaction between parallel Gaussian electromagnetic beams in the ionosphere*; J. Atmospheric and Solar Terr. Phys., **70**, 980-990 (2008) [Impact factor 1.667]
14. M. S. Sodha, **S. K. Agarwal** and A. Sharma, *Interaction between parallel Gaussian electromagnetic beams in ionic collision dominated plasmas with thermal conduction*; J. Plasma Phys. **74**, part 1, 65-77 (2008) [Impact factor 0.579]
15. M. S. Sodha, S. K. Mishra and **S. K. Agarwal**, *Self focusing and cross focusing of Gaussian electromagnetic beams in fully ionized collisional magnetoplasmas*; Phys. Plasmas **14**, 112302 (1-8) (2007) [Impact factor 2.427]
16. M. S. Sodha, A. Sharma and **S. K. Agarwal**, *Focusing of electromagnetic beams in ionosphere, with finite thermal conduction*; J. Geophys. Res. Space Physics **112**, A03302 (1-12) (2007) [Impact factor 3.147]
17. **S. K. Agarwal** and M. S. Sodha, *Steady state self focusing of Gaussian electromagnetic beams in an inhomogeneous nonlinear medium: Effect of absorption and initial curvature of the beam*; Optik **118**, 367-372 (2007) [Impact factor 0.507]
18. M. S. Sodha, **S. K. Agarwal** and A. Sharma, *Mutual interaction between parallel Gaussian electromagnetic beams in plasmas*; Physics of Plasmas **13**, 103107 (1-8) (2006) [Impact factor 2.427]
19. M. S. Sodha, A. Sharma and **S. K. Agarwal**, *Focusing of electromagnetic beams in collisional plasmas with finite thermal conduction*; Physics of Plasmas **13**, 083105 (1-8) (2006). [Impact factor 2.427]