




Shivaji College Faculty Details

Title	First Name	Last Name	Photograph
Dr.	MAMTA		
Designation	Associate Professor		
Address	Shivaji College, Raja Garden, New Delhi – 110027		
Office Phone No.			
Residence			
Mobile			
Email	mamtasingh@shivaji.du.ac.in		
Web-Page			
Educational Qualifications	Ph.D.		
Degree	University/Institute	Year	
Ph.D.	Department of Physics & Astrophysics, University of Delhi	2017	
M.Phil./M.Tech.			
PG	Kurukshetra University, Haryana	2006	
UG	Kurukshetra University, Haryana	2004	
Any Other Qualification	NET	2006	
Career Profile			
<ul style="list-style-type: none"> ♣ Working as an Associate Professor in Shivaji College, University Of Delhi, New Delhi from Feb 15, 2021 onwards. ♣ Worked as an Assistant Professor in Shivaji College, University Of Delhi, New Delhi from August 2006 to Feb 14, 2021. ♣ Worked as an Assistant Professor in Department of Electronics, Kurukshetra University, Haryana for six months (year 2008) 			
Administrative Assignments			

- Teacher In-charge, Physics from May 1, 2021 till date.
- Teacher In-charge, Physical Science from 19.10.2020 to 30.4.2021.
- Member of board of Examiners for setting of question paper for B.Sc.(H) Physics CBCS_Core (III Semester) Thermal Physics Paper (Unique paper code: 32221302) 2019
- Committee member for preparing the Model Question Bank and Model Question Paper of B.Sc. (Honours) core course of Even Semester (ANALOG SYSTEMS AND APPLICATIONS), appointed by committee of Courses in Physics, Department of Physics and Astrophysics, University of Delhi, 2019
- Committee member for preparing the Model Question Bank and Model Question Paper of B.Sc. (Honours) core course of Odd Semester (THERMAL PHYSICS), appointed by committee of Courses in Physics, Department of Physics and Astrophysics, University of Delhi, 2019
- Nodal officer J&K Students under Prime Minister's Special Scholarship scheme since 2017
- Member of library committee, Shivaji College since April 2018- Digitized the college library by introducing RFID
- Member of WDC, Shivaji College since April 2019
- Worked as Teacher In-charge from September 2018 to March 30, 2019, Physics Department Shivaji College
- Worked as a Member of SC/ST/ OBC student counselling committee, Shivaji College for 2 years (2017 – 2019)
- Worked as teacher in-charge from April 2016 to September 2016, Physics department, Shivaji College

Areas of Interest/Specialisation

Laser-Plasma Interactions (Theory and Simulation):

- Laser-Plasma based Accelerators
- High-intensity Laser-driven Particle Acceleration
- Harmonic Generation
- Laser self-focusing
- Laser pulse-compression

TECHNICAL SKILL SET

Analytical Tools - Mathematica, C, C++, Matlab, Latex.

Platform- Windows, Linux.

Subjects Taught

Thermal Physics
Microprocessor 8086 (Taught in 2008 to M.Sc. Electronics Students (KU))
Digital Electronics
Analog systems and applications
Electricity and Magnetism
Mechanics

Innovation Project/Research Projects (Major Grants/Research Collaboration)

NA

Publications Profile (Research Papers/Books)

- **Laser-absorption effect on pulse-compression under Ohmic and weak-relativistic ponderomotive nonlinearity in plasmas, Mamta Singh and D N Gupta, *Laser Phys. Letters* **15**, 016001(2018), DOI: 10.1088/1612-202X/aa930f/meta**
- **Laser-pulse compression in a collisional plasma under weak- relativistic ponderomotive nonlinearity, Mamta Singh and D. N. Gupta, *Physics of Plasmas*, **23**, 053119 (2016), DOI: 10.1063/1.4951722, ISSN: 1070-664X**
- **Temporally asymmetric laser pulse for magnetic-field generation in plasmas, Mamta Singh, Krishna Gopal, and Devki Nandan Gupta, *Physics Letter A*, **380**, 1437 (2016), DOI: 10.1016/j.physleta.2016.02.015, ISSN: 0375-9601**
- **Efficient second- and third-harmonic radiation generation from relativistic laser plasma interactions, M. Singh, D. N. Gupta, and H. Suk, *Physics of Plasmas*, **22**, 063303 (2015), DOI: 10.1063/1.4922435, ISSN: 1070-664X**
- **Relativistic third-harmonic generation of a laser in a self-sustained magnetized plasma channel, M. Singh and D. N. Gupta, *IEEE J. Quantum Electronics*, **50**, 491 (2014), DOI: 10.1109/JQE.2014.2320763, ISSN : 0018-9197**
- **Amplitude saturation effects of a laser-driven plasma beat-wave on electron accelerations D. N. Gupta, Mamta Singh, and H. Suk , *Journal of Plasma Physics*, **81**, 905810324 (2015), DOI: 10.1017/S0022377815000288, ISSN: 0022-3778**
- **Plasma based optical guiding of an amplitude-modulated electromagnetic beam, M. Singh and D. N. Gupta, *Proceedings of SPIE*, **9654**, 96541R-1 (2015), DOI: 10.1117/12.2182397, ISSN: 0277-786X**
- **Effect of laser-plasma channeling on third-harmonic radiation generation, M. Singh and D. N. Gupta, *Proceedings of IPAC, THPRO064*, 3023 (2014), ISBN 978-3-95450-132-8**
- **Simulations on laser wakefield generation in a parabolic magnetic-plasma channel, D. N. Gupta and M. Singh, *Proceedings of IPAC, TUPME075*, 1528 (2014), ISBN 978-3-95450-132-8**

Conference/Faculty Development Programme/Workshop

- Completed Faculty Development Programme on **“E-CONTENT DEVELOPMENT & ONLINE TEACHING** from 07 February, 2021 - February 14, 2021 organized by Teaching Learning Centre, Ramanujan College University of Delhi under the aegis of ministry of education pandit madan mohan malaviya national mission on teachers and teaching and obtained A+
- Completed UGC-Sponsored Short Term Course on **“MOOCs, Online Courses and Open Educational Resources”** from 28th December, 2020 to 2nd January, 2021 organized by UGC-HRDC MAULANA AZAD NATIONAL URDU UNIVERSITY
- Completed One Week Online Faculty Development Programme on **"ICT ENHANCED TEACHING LEARNING AND CREATING MOOCs"** August 18 - August 25, 2020 organized by Ministry of Human Resource Development Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching Teaching Learning Centre Ramanujan College University of Delhi and IQAC, Shivaji College University of Delhi and obtained grade A+
- Completed **Online Summer School-cum-Faculty Development Program** on Advances in Signal Processing and Machine Learning Jointly organized by MHRD-Institution Innovation Council, DDUC Chapter, Deen Dayal Upadhyaya College, University of Delhi and Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) – Delhi Chapter Supported By IEEE Electron Device Society (EDS), Delhi Chapter from July 20, 2020 – July 26, 2020
- Attended **The international Conference on People, Environment, Science & Pandemic** jointly organized by research cell, community engagement & Outreach cell and Department of environmental Science of BNC, University of Delhi from June 5-7, 2020.
- Attended **One Week Course in Gender Studies**, 10th February 2020 to 15th February 2020, **HRDC Jamia Millia Islamia, New Delhi**
- Attended **International Conference on Women’s Leadership for Global Peace and Prosperity**, 9-10 January 2020, Shivaji College , University of Delhi
- Attended **34th National Symposium on Plasma Science & Technology (PLASMA 2019), 3-6 December, Chennai, India**
(Presented Paper “Laser Pulse Shape Distortion in a Plasma in Weakly Relativistic Regime”)
- Attended **14th Asia Pacific Physics Conference 2019 (APPC14)** organized by The Association of Asia Pacific Physical Societies (AAPPS) and Institut Fizik Malaysia, 17-21 November 2019, **Borneo Convention Centre Kuching, Sarawak, Malaysia**
(Presented Paper “Second-Harmonic Generation in Tunnel Ionizing Plasma in the Presence of Electron-Ion Recombination”)

- **Attended** Teachers Conference on the theme ‘Empowering Educators’ organized by ICSI, 17th September 2019
- **Attended One Week Course on Research Methodology**, 4th February 2019 to 9th February 2019, **HRDC Jamia Millia Islamia, New Delhi**
- **Attended One Week Course on Disaster Management**, 26th February 2019 to 5th March 2019, **HRDC Jamia Millia Islamia, New Delhi**
- **Attended 6th RC Basic Science (Interdisciplinary)**, 26th September 2018 to 17th October 2018, **HRDC Jamia Millia Islamia, New Delhi**
- **Presented “Laser Pulse Propagation in a Plasma under Collisional Absorption effects in Weakly-Relativistic Regime”** in The 33rd National Symposium on Plasma Science & Technology (PLASMA- 2018) December 4- 7, 2018, *Department of Physics and Astrophysics, University of Delhi, Delhi In Association with Plasma Science Society of India*
- **Orientation Programme (OR-88)**, 31st May 2017 to 28th June 2017, **CPDHE, University of Delhi, New Delhi**
- **Participated and chaired one session** in 1st National Conference on Current and Future Perspectives in Nanotechnology “NANOWORLD 2018”, 12-13th April, 2018, Department of Physics, Shivaji College, University of Delhi, India
- **Presented “Laser Pulse Compression in a Non-isothermal and Collisional Plasma”** in Butifest, International Symposium on Nonlinear Waves in Fluids and Plasmas, 1-2 March 2017, *IIT Delhi*
- **Presented “Amplification of laser pulses through nonlinear self-compression in weakly-relativistic plasmas”** in APPC-AIP, Joint 13th Asia pacific physics conference and 22nd Australian institute of physics congress, 4-8 December 2016, Brisbane Convention and Exhibition Center, *Brisbane, Australia*
- **Presented “Plasma based optical guiding of an amplitude-modulated electromagnetic beam”** in International Conference on Optics and Photonics (ICOP 2015), February 20-22, 2015, *Kolkata, India*
- **Presented “High-intensity laser pulse guiding in a weakly-relativistic plasma”** in 4th International Conference on Current Developments in Atomic, Molecular, Optical and Nano Physics, March 11-14, 2015, *Delhi, India*
- **Presented “Simulations on laser pulse shape dynamics in a weakly relativistic plasma”** in 4th International Conference on Current Developments in Atomic, Molecular, Optical and Nano Physics, March 11-14, 2015, *Delhi, India*
- **Attended SERB School on “High intensity laser plasma interaction: theory & simulation”**, May 5-23, 2014, *IIT Delhi, New Delhi, India*
- **Presented “Effect of laser-plasma channeling on generation of third-harmonic radiation”** in 5th International Particle Accelerator Conference, June 15-20, 2014, *Dresden, Germany*

- **Presented “Simulations on laser wakefield generation in a Parabolic Magnetic-Plasma Channel”** in 5th International Particle Accelerator Conference, June 15-20, 2014, *Dresden, Germany*
- **Presented “Frequency doubling and tripling of an amplitude-modulated laser in plasmas”** in International Symposium on Ultrafast Intense Laser Science, October 5-10, 2014, *Jodhpur, India*
- **Attended 7th International Conference on Dusty Plasma**, March 3-7, 2014, *New Delhi, India*
- **Presented “Relativistic second- and third-harmonic generation of a laser in a self-sustained magnetized plasma channel”** in 28th National Symposium on Plasma Science & Technology (PLASMA 2013), Dec 3-6, 2013, *Bhubaneswar, India*
- Attended MATLAB and Simulink Academic Tour 2013 of Mathworks, Cluster Innovation Center, *University of Delhi, India*
- Attended Workshop on Information Literacy and Competency 2014, Delhi University Library System, *University of Delhi, India*
- Participated in **ICT Workshop for capacity Building of Delhi University Staff (ILLL Workshop Tier II)**, Jan 8-14, 2010.

Webinars

- Completed One Professional Development Hour by attending Special Public Lecture (Webinar) on “Empathetic Conversational Artificial Intelligence (AI)” by Professor Pascale Fung, FIEEE FISCA (Director, Centre for Artificial Intelligence Research (CAiRE) Professor, Department of Electronic & Computer Engineering and Department of Computer Science & Engineering Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter & MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 26, 2020 at 2:30 pm
- Participated in the online lecture jointly organized by indian association of physics teachers regional council (delhi & haryana) & delhi state science teachers’ forum on ELECTROSTATICS- II by Prof. H. S. Mani Adjunct Professor, Chennai Mathematical Institute, Kelambakkam (Formerly Professor of Physics @ IIT Kanpur and Director, Harish-Chandra Research Institute, Prayagraj (Allahabad)) on 25th July, 2020 at 11:00am.
- Completed One Professional Development Hour by attending Special Public Lecture (Webinar) on “A Reinforcement Learning Framework for Mobile Relay Beamforming” by Professor Athina Petropulu (President-Elect, IEEE Signal Processing Society (2020-2021) Distinguished Professor, Department of Electrical & Computer Engineering, Rutgers, The State University of New Jersey) jointly organized by The National Academy of Sciences, India (NASI) - Delhi

Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 24, 2020 at 7:30 pm

- Participated in the Webinar (Under the Aegis of IQAC) on Stress Management in the Times of COVID-19 Pandemic organised by Women Development Cell, Shivaji College, University of Delhi on July 22, 2020.
- Completed One Professional Development Hour by attending Special Public Lecture (Webinar) on “When to trust a self-driving car..” by Professor Marta Kwiatkowska FRS (Associate Head of MPLS Division Fellow of Trinity College, Department of Computer Science University of Oxford, Oxford) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 23, 2020 at 2:30 pm
- Completed One Professional Development Hour by attending Technical Talk (Webinar) on “The influence of infection on Society before Covid19” by Professor Sir Peter Julius Lachmann (Emeritus Sheila Joan Smith Professor of Immunology, Christ College, University of Cambridge) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 14, 2020 at 4:30 pm
- Completed One Professional Development Hour by attending Technical Talk (Webinar) on “Are we there yet? How do cells find their way?” by Professor Philip K. Maini (Wolfson Centre for Mathematical Biology, Mathematical Institute, Oxford (UK)) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 11, 2020 at 3:30 pm
- Completed One Professional Development Hour by attending Technical Talk (Webinar) on “Can Future Energy Needs be met Sustainably?” by Professor Sir Chris Llewellyn Smith FRS, FAPS (USA), Honorary Fellow, IOP (UK), Foreign Fellow INSA (India) Rudolf Peierls Centre for Theoretical Physics, Parks Road, Oxford OX1 3PU) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 10, 2020 at 1:30 pm
- Participated in national webinar on Science & Technology for Sustainable Development in current scenario organised by Department of Physics, IHL, BPSMV, Khnapur Kalan, Sonipat, Harayana on 3rd July 2020 at 11:00 am.
- Participated in the National Webinar- I "Impact Centric Research: Funding Opportunities and Challenges in Framing Successful Research Proposal” held on 11th July 2020 organized by research cell, shivaji college, University of Delhi
- Completed One Professional Development Hour by attending Technical Talk (Webinar) on “Flow inside the Sun” by Professor Katepalli Sreenivasan (FAAAS, FTWAS, FASME, FInstP, Foreign Fellow INSA, Dean Emeritus of NYU Tandon School of Engineering; The Eugene Kleiner Professor for Innovation in Mechanical Engineering; Professor of Physics (Faculty of Arts and Science); Mathematics (Courant Institute of Mathematical Sciences)) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter& MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 09, 2020 at 6:30 pm
- Completed One Professional Development Hour by attending Technical Talk (Webinar) on “New chemistry and physics in magnetic oxides” by Prof J. Paul Attfield (FRS FRSE FRSC,

Foreign Fellow INSA, Professor of Materials Science at Extreme Conditions, School of Chemistry, Centre for Science at Extreme Conditions, The University of Edinburgh, Edinburgh) jointly organized by The National Academy of Sciences, India (NASI) - Delhi Chapter & MHRD-Institution Innovation Council (IIC) Deen Dayal Upadhyaya College Chapter (University of Delhi) on July 03, 2020 at 4:30 pm

- Attended International Webinar on “ How Huge is Nano? An Introduction to Nanotechnology” organized by Bhaskaracharya College of Applied Sciences on May 29, 2020.
- Attended National webinar on The Role of media and Technology during COVID 19: Issues, Prospects and challenges organized by the Alumni Relations cell, Shivaji College on 9th June 2020.
- Attended National Webinar on “NAHI means NO” organized by research cell, community engagement & Outreach cell of BNC, University of Delhi from May 15, 2020.
- Participated in the webinar on the theme Constructive Living and Education in the times of Corona Crisis, held on 13th May 2020, Internal Quality Assurance Cell, Shivaji College, University of Delhi
- Attended national webinar by Dr. Manoj Kumar Gupta (Scientist at CSIR-AMPRI) on April 22, 2020, at 11 AM IST on “Piezoelectric Flexible Nanogenerator : A New and Renewable Energy Source” organized by Department of Physics, Shivaji College.
- Attended international webinar by Dr. Alireza Farhadizadeh (Scientist at University of West Bohemia, Pilsen, Czech Republic) on April 23, 2020, at 2:30 PM IST on “Mechanical Properties of Thin films” organized by Department of Physics, Shivaji College.
- Attended Virtual Symposium on Emerging Areas of Photonics to Celebrate International Day of Light - May 16, 2020 organized by The National Academy of Sciences India (NASI)

Awards and Distinctions

Plasma based optical guiding of an amplitude-modulated electromagnetic beam, M. Singh and D. N. Gupta, Proceedings of SPIE, 9654, 96541R-1 (2015), DOI: 10.1117/12.2182397, ISSN: 0277-786X (Got selected for publication among top 100 in International conference on optics and photonics ICOP 2015)

Memberships

Plasma Science Society of India (PSSI) – Life time Membership

Other Academic Activities

- Coordinator of **FIRST INTERNATIONAL CONFERENCE ON TECHNOLOGIES FOR SMART GREEN CONNECTED SOCIETY** from Shivaji College, which is being organized on Nov 29-30, 2021 jointly by Yamagata University, Japan and Shivaji College, University of Delhi.
- Convener of Physics Society INVENIO 2021-22.
- Convener of ALUMNI TALK organized by the Department of Physics, Shivaji College, University of Delhi on August 27, 2021.

- Organizing member of JIJABAI ACHIEVERS AWARD CEREMONY organized by Women Development Cell, Shivaji College on September 3, 2021.
- Convener of National Webinar organized on Feb 8, 2021 (Monday) on the theme "**The Behaviour of Light: Wave or Particle**" by Prof. H. C. Verma, Former professor IIT Kanpur, by the Department of Physical Science, Shivaji College, university of Delhi
- Convener, one day workshop for 4 students of B.Sc. (Prog) Physical Science IV Sem to celebrate the national science day at Inter-University Accelerator Centre on 28th February 2021 (online).
- WDC, Shivaji College organized a Webinar on Stress Management (Speaker Dr. Rajesh Nagpal) in the times of Covid-19 Pandemic on 22 July, 2020 .
- Member WDC, Shivaji College, organized following events in year 2019-20
 - Women Development Cell (WDC) organised its Orientation Day on August 9, 2019.
 - Self Defence Workshop AATMBAL: Raised to Fight Injustice was organised by WDC in collaboration with Delhi Police from September 2-6, 2019.
 - WDC organised a workshop in collaboration with ITC VIVEL as part of its brand philosophy of Ab Samjhauta Nahin (No more compromises): Know Your Rights on September 20, 2019.
 - Gender Sensitisation Programme was organised by WDC in collaboration with Srijanatmak Manushi Sanstha (SMS), NGO to make students aware of modern-day issues of gender parity on November 1, 2019.
 - WDC organised a **two-day International Conference** on Women's Leadership for Global Peace and Prosperity, sponsored by University Grants Commission (UGC) from January 9-10, 2020. The Chief Guest for the Conference was Smt. Baby Rani Maurya, Governor, Hon'ble Governor of Uttarakhand.
 - Webinar on "Mind Matters: Coping with Stress" organised by the Women Development Cell (WDC) under the aegis of IQAC on May 11, 2020.
 - International Webinar on Psychological Well-Being and COVID 19: An Internal Journey organised by the Women Development Cell (WDC) under the aegis of IQAC on May 07, 2020.
- Organizing member, **The international Conference on People, Environment, Science & Pandemic** jointly organized by research cell, community engagement & Outreach cell and Department of environmental Science of BNC, University of Delhi from June 5-7, 2020.
- Convener, one day workshop for 10 students of B.Sc.(H) Physics II Semester to celebrate the national science day at Inter-University Accelerator Centre on 28th February 2020.
- Convener, one day educational trip for B.Sc. (H) Physics II and IIIrd Year Students to the the first multi-venue Mega Science Exhibition, Vigyan Samagam, National Science Centre, New Delhi on 18th February 2020
- Attended various workshops and meetings for ANALOG SYSTEMS AND APPLICATIONS PAPER organized by Department of Physics & Astrophysics, University of Delhi regarding model question paper and model question set

- Attended workshop and various meetings for THERMAL PHYSICS PAPER organized by Department of Physics & Astrophysics, University of Delhi regarding model question paper and model question set
- Convener, one day workshop for 20 students of B.Sc.(H) Physics II and III Semester to celebrate the national science day at Inter-University Accelerator Centre on 28th February 2019.
- Organizing member of the workshop “Isotopes- The Wonder Tools” by Dr. C. M. Nautiyal (Prog. Consultant, INSA, New Delhi) on September 30, 2019.
- Organizing member of Lecture series on the topic “Elementary physics” on November 1, 2018.
- Organizing Resource person in 4th International Conference on Current Developments in Atomic, Molecular, Optical and Nano Physics, March 11-14, 2015, *Delhi, India*
- Workshop SPECTRUM-2018, Feb 12, 2018, Shivaji college, University of Delhi, India
- Organizing Resource person in National Conference titled “Current and future perspectives in Nanotechnology: Nanoworld 2018” organized on 12-13 April 2018.

Cultural/Extracurricular Activities

- Participated in Official National Marathon of India (TAAFI RUN) organized by Territorial army and Athletics Federation of India on 2nd October 2018, got the finisher medal
- Participated and got FIRST POSITION in Blind Race in Annual Sports Meet organized by Shivaji College 2019, University of Delhi

Signature of Faculty Member