

Department's 101th Annual Report (1st April 2023 to 31st March 2024): Physics and Astrophysics

Name of the Department

Physics and Astrophysics

Name of the Faculty

Science

Major Activities and Achievements

The Department of Physics and Astrophysics has maintained its position as the topmost QS ranked university physics department in India. It is also one of the largest physics departments in the country, with nearly 780 MSc students and over 180 PhD students, in addition to the presently available 53 regular faculty members. It has sustained its high quality in research, which is evident from over 200 research publications (including books/chapters and conference proceedings) by only its regular faculty members, apart from those by its students, in international refereed journals during the year. Its faculty received several national and international grants and participated in several collaborative projects across the globe. It had also hosted various eminent researchers who gave inspiring lectures to motivate young students. The department's Master's curriculum provides a wide choice of electives, including inter-disciplinary subjects, to its students. Moreover, the various sorts of methodology applied over time to time to enhance learning experiences have been much more strategized when the department went from the offline to the online/blended mode of teaching in recent times. Such strategies include: 1. Online resources, e.g. lecture notes, links to video lectures or experimental demonstrations, and other study materials being provided to the students in online classes, either in the Google classrooms platform or in the Microsoft Teams platform. 2. Interactive classroom sessions, with instant quizzes, group discussions, as well as time-bound assignments, with the provision of students' self assessment being emphasized. The department, under a vibrant Ph.D. program, has offered a plethora of cutting-edge research topics as well, in recent times, making the above strategies much relevant for the Ph.D. course-work. Furthermore, an exclusive departmental portal <http://physics.du.ac.in>, displaying regular updates on its academic and other activities, has successfully run online during the year.

Honours/Distinctions

[1] PROF. BRAJESH CHANDRA CHOUDHARY: (a) Spokesperson, Indian Institutions: Fermilab Collaboration in Neutrino Physics -- continuing in 2023-24, till 2026. [2] PROF. DEBAJYOTI CHOUDHURY: (a) Member, PAC of Department of Science and Technology (DST), Govt. of India, for High Energy Physics, Nuclear Physics, Astrophysics, Plasma Physics and Nonlinear Dynamics -- continuing in 2023-24, (b) Member, Expert Committee of Department of Science and Technology (DST), Govt. of India, for SERC School in THEP -- continuing in 2023-24, (c) Member, Selection Committee for INSPIRE Faculty Awards -- continuing in 2023-24. [3] PROF. PATRICK DAS GUPTA: (a) President, Indian association of General Relativity and Gravitation (IAGRG) -- continuing from 2020, (b) Member, Departmental Research Committee, of the Department of Physics, Indira Gandhi National Tribal University, Amarkantak, Chhattishgarh -- continuing from 2020. [4] PROF. ANNAPOORNI SUBRAMANIAM: Member, Academic council, Jawaharlal Nehru University, Pondicherry University and Amity Institute of Nanotechnology -- continuing in 2023-24. [5] PROF. AMITA CHANDRA: (a) Member, Board of Studies, School of Vocational Studies and Applied Sciences, Gautam Buddha University -- continuing in 2023-24, (b) Research Ambassador, DAAD -- continuing in 2022-23. [6] PROF. NIVEDITA DEO: Member, Complex Systems Society (CCS), Inc -- continuing in 2023-24. [7] PROF. AWADHESH PRASAD: Member, PAC of Department of Science and Technology (DST), Govt. of India, for High Energy Physics, Nuclear Physics, Astrophysics, Plasma Physics and Nonlinear Dynamics -- continuing in 2023-24. [8] PROF. SHYAMA RATH: (a) Coordinator, Internal Quality Assurance Cell (IQAC), University of Delhi -- continuing in 2023-24, (b) Member, PAC of Department of Science and Technology (DST), Govt. of India, for High Energy Physics, Nuclear Physics, Astrophysics, Plasma Physics and Nonlinear Dynamics -- continuing in 2023-24. [9] PROF. SAMIT KUMAR MANDAL: (a) Member, Special committee, Special Centre for Nanoscience (SCNS), Jawaharlal Nehru University -- continuing in 2023-24, (b) Member, Selection committees for JRF/Research Associate/Scientist, Inter-University Accelerator Center -- continuing in 2023-24, (c) Member, Evaluation Committee for JRF to SRF, Inter-University Accelerator Center -- continuing in 2023-24. [10] DR. SOURAV SUR: (a) Visiting Associate, Inter-University Centre for Astronomy and Astrophysics (IUCAA) -- continuing in 2023-24, till 2025, (b) Member, Indian association of General Relativity and Gravitation (IAGRG) -- continuing in 2023-24.

Publications

(a.) Research Articles

Scopus

SN.	Title	Author List	Year	Issue	Volume	Page nos.	Digital Object Identifier (DOI)	Publisher
1	Title	Authors	Year	Journal Issue	Volume	Page	DOI	Publisher
2	Structural and Optical Tunability of Ag-ZnO Nanocomposite Thin Films For Surface-Enhanced Raman Studies	Motla A.; Kumaravelu T.A.; Dong C.-L.; Kandasami A.; Avasthi D.K.; Annapoorni S. Kumari M.;	2024	Plasmonics	19	335	10.1007/s11468-023-01965-z	Springer
3	Analog resistive switching behavior in BiCoO3 thin film	Jindal K.; Munjal S.; Tomar M.; Jha P.K.	2024	Solid-State Electronics	212	108831	10.1016/j.sse.2023.108831	Elsevier Ltd
4	Utilising BC observations to estimate CO contributions from fossil fuel and biomass burning in the Central Himalayan region	Srivastava P.; Naja M.; Bhardwaj P.; Kumar R.; Rajwar M.C.; Seshadri T.R.	2024	Environmental Pollution	341	122975	10.1016/j.envpol.2023.122975	Elsevier Ltd
5	Electrochemical investigations of PVdF-HFP-NaTFSI-[BMPYR] [TFSI] polymer-salt-IL electrolyte for Na-rechargeable battery	Singh V.K.; Chandra A.	2024	Solid State Ionics	405	116448	10.1016/j.ssi.2023.116448	Elsevier B.V.
6	Single-step first order phase transition and gravitational waves in a SIMP dark matter scenario	Chakrabarty N.; Roy H.; Srivastava T.	2024	Nuclear Physics B	998	116392	10.1016/j.nuclphysb.2023.116392	Elsevier B.V.
7	Synthesis of Mesoporous Core Shell Magnetite Bioactive Glass Nanoparticles for	Goel D.; Santhiya D.; Kumar S.; Kumar	2024	ChemistrySelect	9	e202302119	10.1002/slct.202302119	John Wiley and Sons Inc

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	Magnetic Hyperthermia Treatment of Cancer	Mahapatro A. Paladi A.K.; Dwivedi C.; Rana P.; Nobleson K.; Susobhanan A.; Joshi B.C.; Tarafdar P.; Deb D.; Arumugam S.; Gopakumar A.; Krishnakumar M.A.; Batra N.D.; Debnath J.; Kareem F.; Arumugam P.; Bagchi M.; Bathula A.; Dandapat S.; Desai S.; Gupta Y.; Hisano S.; Kharbanda D.; Kikunaga T.; Kolhe N.; Maan Y.; Manoharan P.K.; Singha J.; Srivastava A.; Surnis M.; Takahashi K. Kaur A.; Kumar A.; Sharma C.; Dhanda N.; Raghav; Madhavan N.; Nath S.; Gehlot J.; Gonika; Kumar C.; Sherpa P.; Parihari A.; Pandey J.; Gupta A.K.; Sharma H.P.; Behera B.R.	2024	Monthly Notices of the Royal Astronomical Society	527	213	10.1093/mnras/stad3122	Oxford University Press
8	Multiband extension of the wideband timing technique							
9	Evaporation residue cross-section measurements for $^{30}\text{Si}+^{142}\text{Ce}$ system		2024	Nuclear Physics A	1042	122791	10.1016/j.nuclphysa.2023.122791	Elsevier B.V.
10	Defects passivity and UV emission characteristics in yttrium doped ZnO nanoparticles	Kunj S.; Arora M.; Murugavel S.	2024	Inorganic Chemistry Communications	161	112046	10.1016/j.inoche.2024.112046	Elsevier B.V.
11	Active waveguide deformation dynamics using acoustic emission technology for landslide early warning system	Kumar D.; Mahapatro A.K.; Singh S.K.	2024	Bulletin of Engineering Geology and the Environment	83	68	10.1007/s10064-024-03548-6	Springer Science and Business Media Deutschland GmbH
12	Detailed investigations on stability and optoelectronic characteristics of the 1T-PdS ₂ monolayer	Priyanka; Chowdhury S.; Ritu; Kumar V.; Kumar R.; Chand F.	2024	Physica Scripta	99	25945	10.1088/1402-4896/ad1a0f	Institute of Physics
13	Role of annealing environments on the local electronic and optical properties of zinc oxide films	Motla A.; Kumaravelu T.A.; Dong C.-L.; Chen C.-L.; Asokan K.; Annapoorni S.	2024	Journal of Materials Science: Materials in Electronics	35	267	10.1007/s10854-024-12018-4	Springer
14	Coupling effect and enhanced detection of organic dyes using SERS with Ag noble metal embellished hexagonal ZnO nanorods	Motla A.; Sharma D.; Soma V.R.; Annapoorni S.	2024	Optical Materials	149	115110	10.1016/j.optmat.2024.115110	Elsevier B.V.
15	Assessing the high-resolution PM _{2.5} measurements over a Central Himalayan site: impact of mountain meteorology and episodic events	Rawat V.; Singh N.; Singh J.; Rajput A.; Dhaka S.K.; Matsumi Y.; Nakayama T.; Hayashida S.	2024	Air Quality, Atmosphere and Health	17	51	10.1007/s11869-023-01429-7	Springer Science and Business Media B.V.
16	Fabrication of Mesoporous Silica Nanoparticle-Decorated Graphene Oxide Sheets for the Effective Removal of Lead (Pb ²⁺) from Water	Bagbi Y.; Solanki P.R.	2024	ACS Omega	9	304	10.1021/acsomega.3c05228	American Chemical Society
17	Measurement of mass-angle and mass-total kinetic energy distributions from the fission of ^{190}Pt compound nucleus	None V.; None K.; Golda K.S.; Ghosh T.K.; Jhingan A.; Sugathan P.; Chatterjee A.; Behera B.R.	2024	Journal of Physics G: Nuclear and Particle Physics	51	35103	10.1088/1361-6471/ad1f2f	Institute of Physics

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18	Theoretical optical characterization of one-dimensional ternary photonic crystal embedded with nanocomposite of bimetallic core-shell nanoparticles	Kumar A.; Kumar R.; Saneesh N.; None M.; Yadav A.; Yadav C.; Appannababu S.; Duggi S.K.; Dubey R.; Rani K.; Kumar N.; Banerjee A.; Rani A.; None K.; Noor S.; Acharya J.; Singh H.	2024	Optical and Quantum Electronics	56	252	10.1007/s11082-023-05791-9	Springer
19	Axion-like particles at future e-p collider	Mosala K.; Sharma P.; Kumar M.; Goyal A.	2024	European Physical Journal C	84	44	10.1140/epjc/s10052-024-12401-9	Institute for Ionics
20	Level structures of ⁹⁶ Tc and their microscopic description	Rana A.K.; Sihotra S.; Sharma H.P.; Singh V.; Bhat G.H.; Jehangir S.; Sheikh J.A.; Rather N.; Kuldeep; Singh N.; Bhowmik R.K.; Kumar R.; Singh R.P.; Muralithar S.; Chauhan P.; Verma D.S.; Trivedi T.; Kumar S.; Palit R.; Mehta D.	2024	Journal of Physics G: Nuclear and Particle Physics	51	35104	10.1088/1361-6471/ad1f2e	Institute of Physics
21	Co ₃ O ₄ /WO ₃ /C Nanorods with Porous Structures as High-Performance Electrocatalysts for Water Splitting	Ahmed I.; Dastider S.G.; Biswas R.; Roy A.; Mondal K.; Halder K.K.	2024	ACS Applied Nano Materials	7	4035	10.1021/acsnm.3c05592	American Chemical Society
22	Chiral-Induced Spin Selectivity Modulated Time-Correlated Single-Photon Counting for DNA Hybridization Detection	Bangruwa N.; Tiwari M.; Shandilya A.; Gutierrez R.; Peralta M.; Varela S.; Cuniberti G.; Mishra D.	2024	Journal of Physical Chemistry Letters	15	2384	10.1021/acs.jpcllett.3c03479	American Chemical Society
23	Time-tuned ZnO(x)/MWCNTs hybrid cold cathodes for next-generation electron emission	Sarvar M.; Aalam S.M.; Khan S.; Khan M.S.; Ali J.	2024	Journal of Materials Science: Materials in Electronics	35	589	10.1007/s10854-024-12270-8	Springer
24	Fabrication and characterization of thin ^{120,124} Sn films for heavy-ion nuclear reaction measurements	Rani A.; Mandal S.; Abhilash S.R.; Kabiraj D.; Noor S.	2024	Vacuum	221	112883	10.1016/j.vacuum.2023.112883	Elsevier Ltd
25	Entrance channel dependence of quasi fission in reactions leading to ²⁰⁶ Po compound nucleus	Hajara K.; Musthafa M.M.; Madhavan N.; Nath S.; Gehlot J.; Gonika; Midhun C.V.; Akbar S.; Shana F.S.; Parihari A.; Biswas R.; Kaur A.	2024	Nuclear Physics A	1042	122789	10.1016/j.nuclphysa.2023.122789	Elsevier B.V.
26	Two-step growth of alumina nanoparticle decorated graphene oxide surfaces: Effect on photocatalytic activity	Verma S.; Santra B.; Chattaraj A.; Samanta A.; Chowdhury S.; Srivastava S.; Sagdeo A.; Kanjilal A.; Katharria Y.S.	2024	Journal of Applied Physics	135	64901	10.1063/5.0180885	American Institute of Physics Inc.
27	Ultrasensitive HCHO sensor based on Cr-doped cerium oxide nanoparticles with full	Manikandan V.; Kadian A.; Singh A.; Annapoorni S.	2024	Surfaces and Interfaces	44	103598	10.1016/j.surfin.2023.103598	Elsevier B.V.

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28	recoverability and decisive anti-humidity ability Unveiling the role of vanadium doping in modulating morphological and electrical properties of piezoelectric Na _{0.46} K _{0.46} Li _{0.08} NbO ₃ ceramics for energy harvesting	Yadav T.; Sinha N.; Sagar P.; Shukla M.; Kumar R.; Kumar B.	2024	Ceramics International	50	8669	10.1016/j.ceramint.2023.12.137	Elsevier Ltd
29	Low temperature relaxor behaviour of SrBi _{1.5} La _{0.5} Nb ₂ O ₉ ceramics	Jain R.; Verma M.; Tanwar A.; Menon R.; Haridas D.; Mahajan S.; Sreenivas K.	2024	Ferroelectrics	618	696	10.1080/00150193.2023.2296295	Taylor and Francis Ltd.
30	Augmented dynamics of nonlinear systems: A review	Punetha N.; Khatun A.A.; Jafri H.H.; Prasad A.; Shrimali M.D.	2024	EPL	145	13001	10.1209/0295-5075/ad0bc7	Institute of Physics
31	Methyl-orange/reduced graphene oxide composite as the electrode material for the solid-state supercapacitor	Singh K.; Kaur A.	2024	International Journal of Chemical Reactor Engineering	22	59	10.1515/ijcre-2023-0068	Walter de Gruyter GmbH
32	Universe bouncing its way to inflation	Kaur M.; Nandi D.; Choudhury D.; Seshadri T.R.	2024	International Journal of Modern Physics D	33	2450006	10.1142/S0218271824500068	World Scientific
33	Facile synthesis of nitrogen-doped reduced graphene oxide/zinc oxide nanocomposites for enhanced room-temperature ammonia gas detection	Gupta S.; Ravikant C.; Kaur A.	2024	Journal of Materials Science: Materials in Electronics	35	151	10.1007/s10854-023-11854-0	Springer
34	Theoretical electronic and optical properties of AlGaAsN/GaAs quantum well using 10 band kp approach	Sharma A.; Gupta G.; Bhattarai S.	2024	Indian Journal of Physics	98	127	10.1007/s12648-023-02786-w	Springer
35	Tailored nanoparticles for magnetic hyperthermia: Highly stable aqueous dispersion of Mn-substituted magnetite superparamagnetic nanoparticles by double surfactant coating for improved heating efficiency	Singh A.; Kumar P.; Pathak S.; Jain K.; Garg P.; Pant M.; Mahapatro A.K.; Singh R.K.; Rajput P.; Kim S.-K.; Maurya K.K.; Pant R.P.	2024	Journal of Alloys and Compounds	976	172999	10.1016/j.jallcom.2023.172999	Elsevier Ltd
36	Scintillator efficiency enhancement potential consequent to the pressure-dependent electronic, optical and elastic properties of CaI ₂ : first-principles calculations	Kumar P.; Vedeshwar A.G.	2024	High Pressure Research	44	69	10.1080/08957959.2024.2311919	Taylor and Francis Ltd.
37	EMI Shielding Properties of Sub-micron Polymer Composite of Barium Strontium Titanate Loaded with Polystyrene, Graphite Powder, and Carbon Fibre	Miglani R.; Gupta R.; Kumar A.; Sachdev V.K.; Tomar M.; Chowdhuri A.	2024	Arabian Journal for Science and Engineering	49	1037	10.1007/s13369-023-08004-3	Institute for Ionics
38	Neutrino phenomenology in a model with generalized CP symmetry within type-I seesaw framework	Tapender; Kumar S.; Verma S.	2024	Physical Review D	109	15004	10.1103/PhysRevD.109.015004	American Physical Society
39	Results and analysis of changes in structural, Raman and luminescence properties in anthracene crystals by divalent metal ions doping	Kumar R.; Sinha N.; Kumar B.	2024	Journal of Materials Science: Materials in Electronics	35	639	10.1007/s10854-024-12374-1	Springer
40	Pressure dependence of band gap of (0 4 0) oriented TII films	Mohanty C.K.; Kumar P.; Vedeshwar A.G.	2024	Materials Letters	359	135928	10.1016/j.matlet.2024.135928	Elsevier B.V.
41	Highly efficient polyaniline based flexible electrochemical sensor for bisphenol a detection	Gupta V.; Chopra A.; Arora K.; Kumar P.	2024	Microchemical Journal	197	109914	10.1016/j.microc.2024.109914	Elsevier Inc.

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		Srivastava A.; Jain R.; Sharma I.; Dhoke N.; Cheema A.; Vashishth S.; Kumar L.						
42	P(VDF-TrFE)-based polymer nanocomposites comprising of reduced graphene oxide decorated with CoFe ₂ O ₄ @MCM 41 for efficient microwave absorption in X-band	Anjana; Chandra A.	2024	Journal of Applied Polymer Science	141	e54954	10.1002/app.54954	John Wiley and Sons Inc
43	Nitrogen Doping in NiS/Ni ₃ S ₄ Nanowire-Based Electrocatalysts for Promoting the Second-Order Hydrogen Evolution Reaction	Ahmed I.; Dastider S.G.; Roy A.; Mondal K.; Haldar K.K.	2024	ACS Applied Nano Materials	7	661	10.1021/acsnm.3c04807	American Chemical Society
44	Laser beat-wave interaction with electronâhole plasmas relevant to terahertz field generation	Singh A.P.; Gopal K.; Gupta D.N.; Kundu M.; Varshney P.	2024	Indian Journal of Physics	98	383	10.1007/s12648-023-02832-7	Springer
45	Surfactants effect on the electrochemical properties of FeSe ₂ electrode for supercapacitor with first principles insights into quantum capacitance	Varun Sarathi M.T.; Tanwar S.; Sreehari M.S.; Mondal K.; Sharma A.L.	2024	Ceramics International	50	7266	10.1016/j.ceramint.2023.11.305	Elsevier Ltd
46	Localization-driven quantum sensing	Sahoo A.; Mishra U.; Rakshit D.	2024	Physical Review A	109	L030601	10.1103/PhysRevA.109.L030601	American Physical Society
47	Fabrication of Electronic Silk Fabrics via RGO Adhesion Incorporating Oxygen Plasma Treatment	Sarma B.; Rani K.V.; Gupta D.N.	2024	Engineering Proceedings	52	5	10.3390/engproc2023052005	Multidisciplinary Digital Publishing Institute (MDPI)
48	Gd doped Cerium Oxide for organic dye degradation and tuning of magnetic properties	Ankita; Chahal S.; Singh S.; Kumar L.; Gupta V.; Kumar S.; Kumar S.; Kumar P.	2024	Materials Science and Engineering: B	300	117049	10.1016/j.mseb.2023.117049	Elsevier Ltd
49	Effective gravitational couplings of Kaluza-Klein gauge theories	Ashok S.K.; John R.R.; Layon T.J.; Mahato S.; Raman M.	2023	Journal of High Energy Physics	2023	137	10.1007/JHEP09(2023)137	Springer Science and Business Media Deutschland GmbH
50	Novel hierarchical porous carbon derived from biomass Citrus limetta pulp for high-performance quasi-solid-state supercapacitor electrodes	Singh K.; Kumar R.; Kaur A.	2023	Journal of Energy Storage	71	108121	10.1016/j.est.2023.108121	Elsevier Ltd
51	Addressing three-body fragmentation of methane dication using anative frames: Evidence of internal excitation in fragments	Rajput J.; Garg D.; Cassimi A.; FIA@chard X.; Rangama J.; Safvan C.P.	2023	Journal of Chemical Physics	159	184303	10.1063/5.0171881	American Institute of Physics Inc.
52	Enhancement of persistent currents and magnetic fields in a two dimensional quantum ring	Prasad V.; Arora M.; Varsha	2023	Scientific Reports	13	15486	10.1038/s41598-023-42417-2	Nature Research
53	Sensitivity of \hat{P}^2 values extracted from quasi elastic barrier distribution to the 2n transfer channel	Mohanto G.; Parihari A.; Gupta Y.K.; Pal A.; Gandhi A.; De S.; Ramachandran K.; Mirgule E.T.; Srinivasan B.; Kalita K.; Kumar A.; Deb N.K.; Rani K.; Tejaswi A.; Vadagama C.; Bharud V.; Danu L.S.; Roy B.J.; Kushwaha M.; Nayak B.K.; Saxena A.	2023	European Physical Journal A	59	234	10.1140/epja/s10050-023-01143-z	Springer
54	Entanglement dynamics via periodic modulations	Kumar Singh M.; Bhatt V.; K	2023	Journal of Optics (United	25	125402	10.1088/2040-8986/ad0405	Institute of Physics

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	in an optomechanical system with embedded double quantum dots	Jha P.; B Bhattacharjee A.		Kingdom)				
55	Effect of low sintering temperature on the structural and magnetic properties of M-type strontium hexaferrite	Rana K.; Thakur S.; Tomar M.; Gupta V.; Thakur A.	2023	Journal of Magnetism and Magnetic Materials	587	171289	10.1016/j.jmmm.2023.171289	Elsevier B.V.
56	Shannon entropy along hydrogen isoelectronic sequence using numerov method	Joshi R.; Verma N.; Mohan M.	2023	Revista Mexicana de Fisica	69	60401	10.31349/RevMexFis.69.060401	Sociedad Mexicana de Fisica
57	A Coronal Mass Ejection Source Region Catalog and Their Associated Properties	Majumdar S.; Patel R.; Pant V.; Banerjee D.; Rawat A.; Pradhan A.; Singh P.	2023	Astrophysical Journal, Supplement Series	268	38	10.3847/1538-4365/aceb62	American Astronomical Society
58	Valley conductance and reflection probabilities in substrate-induced graphene superlattice	Prajapati V.; Deo N.	2023	Physica B: Condensed Matter	669	415255	10.1016/j.physb.2023.415255	Elsevier B.V.
59	Facile synthesis and characterization of polymer composites with cobalt ferrite and biomass based activated carbon for microwave absorption	Anjana; Chandra A.	2023	Materials Today Communications	37	107397	10.1016/j.mtcomm.2023.107397	Elsevier Ltd
60	Effect of codoping of rare earth elements and Cr on multiferroic, optical and photocatalytic properties of BiFeO ₃	Ahmad T.; Jindal K.; Tomar M.; Jha P.K.	2023	Materials Today Communications	37	107516	10.1016/j.mtcomm.2023.107516	Elsevier Ltd
61	Dynamics of coupled rotors in external fields	Devi S.; Prasad V.	2023	Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy	302	122983	10.1016/j.saa.2023.122983	Elsevier B.V.
62	Exploring complexity of class-A Beta-lactamase family using physiochemical-based multiplex networks	Bhadola P.; Deo N.	2023	Scientific Reports	13	20626	10.1038/s41598-023-48128-y	Nature Research
63	Diglyme-Based Solvate Ionic Liquid Gelled in Poly(vinylidene fluoride-co-hexafluoropropylene): A Flexible Electrolyte for High-Performance Magnesium-Ion Batteries	Kumari P.; Parveen S.; Hashmi S.A.	2023	ACS Applied Energy Materials	6	12468	10.1021/acsaem.3c02404	American Chemical Society
64	Nuclear Structure and Decay Data for A ^z = 222 Isobars	Balraj S.; Basunia M.S.; Jun C.; Dimitriou P.; Amro B.M.S.; Basu S.; Das S.; Diwanshu; Karmakar A.; Lazaric M.J.; Leblond S.R.; Nayak S.S.; Ngwetsheni C.; Rathi A.; Rawat P.S.; Rohila B.; Vallet V.	2023	Nuclear Data Sheets	192	315	10.1016/j.nds.2023.10.002	Academic Press Inc.
65	Studies on photovoltaic properties of BFO/WO ₃ bilayer thin films for solar energy harvesting applications	Lamichhane S.; Sharma S.; Tomar M.; Chowdhuri A.	2023	Results in Optics	13	100539	10.1016/j.rio.2023.100539	Elsevier B.V.
66	Stone-Wales Decorated Phagraphene: A Potential Candidate for Supercapacitor Electrodes and Thermal Transport	Ghosh M.; Chowdhury S.; Majumdar A.; Jana D.	2023	ACS Applied Electronic Materials	5	6725	10.1021/acsaelm.3c01219	American Chemical Society
67	H ⁺ ion implantation-induced effect investigations in a-plane GaN layer on r-plane sapphire	Sharmila; Dalal S.; Raman R.; Senthil Kumar P.; Pandey A.	2023	Applied Physics A: Materials Science and Processing	129	680	10.1007/s00339-023-06923-4	Springer Science and Business Media Deutschland GmbH
68	The second data release from the European Pulsar Timing Array: III. Search for gravitational wave signals	Chen	2023	Astronomy and Astrophysics	678	A50	10.1051/0004-6361/202346844	EDP Sciences

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69	Multistable Protocells Can Aid the Evolution of Prebiotic Autocatalytic Sets	Singh A.Y.; Jain S.	2023	Life	13	2327	10.3390/life13122327	Multidisciplinary Digital Publishing Institute (MDPI)
70	Highly efficient and cost-effective polyaniline-based ammonia sensor on the biodegradable paper substrate at room temperature	Gupta V.; Malik R.; Kumar L.	2023	Materials Chemistry and Physics	310	128388	10.1016/j.matchemphys.2023.128388	Elsevier Ltd
71	Circuit complexity for coherent-thermal states in bosonic string theory	Shabir A.; Dey S.; Wani S.S.; Lone S.; Rubab S.; Faizal M.	2023	European Physical Journal C	83	851	10.1140/epjc/s10052-023-11967-0	Institute for Ionics
72	Heterostructures of 2D Core/Shell Nanoplatelets with 2D MoS ₂ as an Efficient Electrocatalyst for Hydrogen Evolution Reaction	Medda A.; Biswas R.; Dastider S.G.; Ghosh S.; Mondal K.; Halder K.K.; Patra A.	2023	ACS Applied Energy Materials	6	11745	10.1021/acsaem.3c02443	American Chemical Society
73	The second data release from the European Pulsar Timing Array: II. Customised pulsar noise models for spatially correlated gravitational waves	Antoniadis J.; Arumugam P.; Arumugam S.; Babak S.; Bagchi M.; Nielsen A.-S.B.; Bassa C.G.; Bathula A.; Berthereau A.; Bonetti M.; et al	2023	Astronomy and Astrophysics	678	A49	10.1051/0004-6361/202346842	EDP Sciences
74	A first-principles study of ternary metal chalcogenides Ba ₂ MnX ₃ (X=Te,Se,S) for efficient thermoelectric applications empowered by machine-learning interatomic potential	Rakshit M.; Chowdhury S.; Majumdar A.; Banerjee D.; Jana D.	2023	Computational Materials Science	230	112526	10.1016/j.commatsci.2023.112526	Elsevier B.V.
75	Development of CdS-SnO ₂ hybrid nanocomposite thin films for trace level detection of NO ₂ gas	Sao A.K.; Sharma A.; Verma M.; Tomar M.; Chowdhuri A.	2023	Sensors and Actuators B: Chemical	393	134198	10.1016/j.snb.2023.134198	Elsevier B.V.
76	A unified cosmological dark sector from a Bose-Einstein condensate	Das S.; Sur S.	2023	Physics of the Dark Universe	42	101331	10.1016/j.dark.2023.101331	Elsevier B.V.
77	Fragile electronic superconductivity in a Bi single crystal	Kumar A.; Prakash O.; Loke R.; Pramanik A.; Sensarma R.; Ramakrishnan S.; Bag B.; Thamizhavel A.; Ramakrishnan S.	2023	Physical Review B	108	224512	10.1103/PhysRevB.108.224512	American Physical Society
78	SU(2) _L triplet scalar as the origin of the 95 GeV excess	Ashanujjaman S.; Banik S.; Coloretti G.; Crivellin A.; Mellado B.; Mulaudzi A.-T.	2023	Physical Review D	108	L091704	10.1103/PhysRevD.108.L091704	American Physical Society
79	Relativistic atomic structure calculations, plasma and thermodynamic parameters for Ca X 0D, 1D, and 2D magnetic nanostructures:	Kumar N.; Shivankar; Jha A.K.S.; Dimri M.; Dawra D.; Mohan M.	2023	European Physical Journal Plus	138	1155	10.1140/epjp/s13360-023-04751-2	Springer Science and Business Media Deutschland GmbH
80	Classification and their applications in modern biosensors	Tiwari M.; Bangruwa N.; Mishra D.	2023	Talanta Open	8	100257	10.1016/j.talo.2023.100257	Elsevier B.V.
81	High-resolution Spectroscopic Metallicities of Milky Way Cepheid Standards and Their Impact on the Leavitt Law and the Hubble Constant	Bhardwaj A.; Riess A.G.; Catanzaro G.; Trentin E.; Ripepi V.; Rejkuba M.; Marconi M.; Ngeow C.-C.; Macri L.M.; Romaniello M.; Molinaro R.; Singh H.P.; Kanbur S.M.	2023	Astrophysical Journal Letters	955	L13	10.3847/2041-8213/acf710	American Astronomical Society

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82	Nanofilm-enhanced electrochemical DNA sensing: a breakthrough for yellow rust detection in wheat	Rehsawla R.; Dhull N.; Tomar M.; Sharma S.; Yadav N.R.	2023	Materials Research Express	10	116402	10.1088/2053-1591/acffac	Institute of Physics
83	Effect of Annealing on Resistive Switching Properties of Glancing Angle Deposition-Assisted WO ₃ Thin Films	Lamichhane S.; Sharma S.; Tomar M.; Chowdhuri A.	2023	Physica Status Solidi (A) Applications and Materials Science	220	2300358	10.1002/pssa.202300358	John Wiley and Sons Inc
84	Probing size-dependent defects in zinc oxide using synchrotron techniques: impact on photocatalytic efficiency	Kadian A.; Manikandan V.; Dev K.; Kumar V.; Yang C.-J.; Lin B.-H.; Chen C.L.; Dong C.L.; Asokan K.; Annapoorni S.	2023	Physical Chemistry Chemical Physics	25	25639	10.1039/d3cp02923a	Royal Society of Chemistry
85	Theoretical investigation of quantum capacitance of Co-doped I _± -MnO ₂ for supercapacitor applications using density functional theory	Vijayan A.K.; Sreehari M.S.; Kour S.; Dastider S.G.; Mondal K.; Sharma A.L.	2023	Physical Chemistry Chemical Physics	25	25789	10.1039/d3cp03080f	Royal Society of Chemistry
86	Defect states in graphene oxide mixed nanostructured calcium cobalt oxide	Puri N.; Tandon R.P.; Padmavati M.V.G.; Mahapatro A.K.	2023	Journal of Alloys and Compounds	963	171232	10.1016/j.jallcom.2023.171232	Elsevier Ltd
87	Aptamer-based silver nanoparticle decorated paper platform for electrochemical detection ovarian cancer biomarker PDGF	Sharma P.; Hasan M.R.; Khanuja M.; Rawal R.; Shivani; Pilloton R.; Narang J.	2023	Materials Chemistry and Physics	306	128114	10.1016/j.matchemphys.2023.128114	Elsevier Ltd
88	Inaccessibility regions for the sterile neutrino searches at the long baseline experiments	Kaur D.; Verma S.K.	2023	Nuclear Physics B	995	116319	10.1016/j.nuclphysb.2023.116319	Elsevier B.V.
89	Investigation of AC conductivity and dielectric relaxation of lithium modified zinc borate semiconducting glasses for energy storage applications	Pawaria S.; Ahlawat J.; Dahiya S.; Ohlan A.; Punia R.; Murugavel S.; Maan A.S.	2023	Journal of Non-Crystalline Solids	620	122592	10.1016/j.jnoncrysol.2023.122592	Elsevier B.V.
90	Sources and Radiative Impact of Carbonaceous Aerosols Using Four Years Ground-Based Measurements over the Central Himalayas	Srivastava P.; Naja M.; Seshadri T.R.	2023	Aerosol and Air Research	23	220381	10.4209/aaqr.220381	AAGR Aerosol and Air Quality Research
91	Probing binary fragmentation dynamics of 48 Ti + 232 Th reaction at an excitation energy of 63.5 MeV	Shruti; Behera B.R.; Saneesh N.; Nasirov A.K.; Arora H.; Sharma C.; Amit; Subodh; Arora D.; Chakraborty K.; Kaur A.; Raghav; Kumar M.; Golda K.S.; Jhingan A.; Sugathan P.; Singh H.; Mandal S.; Wollersheim H.J.; Gerl J.	2023	European Physical Journal A	59	238	10.1140/epja/s10050-023-01135-z	Springer
92	Control of Correlation Using Confinement in Case of Quantum System	Kumar K.; Prasad V.	2023	Annalen der Physik	535	2300166	10.1002/andp.202300166	John Wiley and Sons Inc
93	Probing interaction of atherogenic lysophosphatidylcholine with functionalized graphene nanosheets: theoretical modelling and experimental validation	Panigrahi A.R.; Yadav P.; Beura S.K.; Singh J.; Dastider S.G.; Singh S.K.; Mondal K.	2023	Journal of Molecular Modeling	29	310	10.1007/s00894-023-05717-y	Springer Science and Business Media Deutschland GmbH
94	Effect of 3d transition metal doping on the structural, electronic, & magnetic properties of BiCoO ₃ using first principles study	Kumari M.; Jindal K.; Tomar M.; Jha P.K.	2023	Journal of Magnetism and Magnetic Materials	588	171383	10.1016/j.jmmm.2023.171383	Elsevier B.V.
95	Correlation of cation-anion radii ratio with physical and electronic	Kumar P.; Kumar A.; Vedeshwar A.G.	2023	Solid State Communications	371	115281	10.1016/j.ssc.2023.115281	Elsevier Ltd

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96	properties of scintillator materials barium dihalides (BaX ₂ , X = F, Cl, Br, I): DFT calculations and experimental results Stimulated Raman scattering coupled with decay instability in a magnetized plasma with hot drifting electrons	Kamboj O.; Gupta D.N.; Kant N.	2023	Modern Physics Letters B	37	2350137	10.1142/S0217984923501373	World Scientific
97	Stability analysis of warm quintessential dark energy model	Das S.; Hussain S.; Nandi D.; Ramos R.O.; Silva R.	2023	Physical Review D	108	83517	10.1103/PhysRevD.108.083517	American Physical Society
98	Nanostructured TLDs: Studying the impact of crystalline size on the Thermoluminescence glow-curve shape and electron trapping parameters	Tsoutsoumanos E.; Saleh M.; Konstantinidis P.G.; Altunal V.; Sahare P.D.; Yengigil Z.; Karakasidis T.; Kitis G.; Polymeris G.S.	2023	Radiation Physics and Chemistry	212	111067	10.1016/j.radphyschem.2023.111067	Elsevier Ltd
99	Impact of multichance fission on fragment-neutron correlations in Pa 227	Saneesh N.; Arora D.; Chatterjee A.; Kumar N.; Parihari A.; Kumar C.; Ahmed I.; Kumar S.; Kumar M.; Jhingan A.; Golra K.S.; Vinodkumar A.M.; Sugathan P.	2023	Physical Review C	108	34609	10.1103/PhysRevC.108.034609	American Physical Society
100	AstroSat observation of the magnetar SGR J1830-0645 during its first detected X-ray outburst	Sharma R.; Jain C.; Paul B.; Seshadri T.R.	2023	Monthly Notices of the Royal Astronomical Society	526	4877	10.1093/mnras/stad3026	Oxford University Press
101	Electrochemical performance of ZnMgO photoanodes prepared by a green synthesis route	Gupta G.; Bala N.; Rath S.	2023	MRS Communications	13	1196	10.1557/s43579-023-00422-6	Springer Nature
102	Enhanced energy storage efficiency with superior thermal stability under low electric field and large electric field driven strain in environment-friendly Bi _{0.5} Na _{0.5} TiO ₃ based ferroelectric modified with LiNbO ₃	Singh A.; Kharangarh P.; Gupta V.	2023	Journal of Alloys and Compounds	945	169181	10.1016/j.jallcom.2023.169181	Elsevier Ltd
103	Effect of K ⁺ cation doping on structural and morphology of MgFe ₂ O ₄ and their role in green electrical energy generation	Kumar P.; Sharma R.; Saifullah M.; Singh A.; Bhardwaj V.; Kansal M.K.; Verma V.	2023	Journal of Alloys and Compounds	944	169169	10.1016/j.jallcom.2023.169169	Elsevier Ltd
104	Effect of redox reactions on the thermoluminescence characteristics of Cu-doped NaLi ₂ PO ₄ phosphors	Bai B.; Sahare P.D.	2023	RSC Advances	13	20298	10.1039/d3ra02498a	Royal Society of Chemistry
105	Comparative investigation of 1D photonic crystal of magneto-optical and electro-optical materials with a nanocomposite of three/four-phase mixtures	Nautiyal V.K.; Gupta V.; Gautam R.; Upadhyay P.	2023	Optical and Quantum Electronics	55	549	10.1007/s11082-023-04824-7	Springer
106	Magnetotransport in Weyl semimetal with and without disorder and the effect of tilted magnetic field	Yadav N.; Deo N.	2023	Physica E: Low-Dimensional Systems and Nanostructures	148	115601	10.1016/j.physe.2022.115601	Elsevier B.V.
107	Highly porous activated carbon prepared from the bio-waste of yellow mustard seed for high-capacity supercapacitor applications	Kumar R.; Singh K.; Kumar P.; Kaur A.	2023	Materials Chemistry and Physics	304	127869	10.1016/j.matchemphys.2023.127869	Elsevier Ltd

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109	First principle calculation of structural, electronic, optical, elastic and thermodynamic properties of group IIA metal iodides: Structure-property correlation	Kumar P.; Kumar A.; Dhawan T.; Vedeshwar A.G.	2023	Journal of Physics and Chemistry of Solids	175	111195	10.1016/j.jpccs.2022.111195	Elsevier Ltd
110	Evidence of transverse wobbling motion in Eu 151	Mukherjee A.; Bhattacharya S.; Trivedi T.; Tiwari S.; Singh R.P.; Muralithar S.; Yashraj; Katre K.; Kumar R.; Palit R.; Chakraborty S.; Jehangir S.; Nazir N.; Rouoof S.P.; Bhat G.H.; Sheikh J.A.; Rather N.; Raut R.; Ghugre S.S.; Ali S.; Rajbanshi S.; Nag S.; Tiwary S.S.; Sharma A.; Kumar S.; Yadav S.; Jain A.K.	2023	Physical Review C	107	54310	10.1103/PhysRevC.107.054310	American Physical Society
111	Constraints on the parameterized deceleration parameter in FRW universe	Chaudhary H.; Bouali A.; Debnath U.; Roy T.; Mustafa G.	2023	Physica Scripta	98	95006	10.1088/1402-4896/acea02	Institute of Physics
112	Analysis of line intensity ratio for optical transitions of 3d6 levels and plasma screening effect on atomic structure of Fe III ion	Yadav F.; Goyal A.; Singh N.	2023	Radiation Physics and Chemistry	206	110795	10.1016/j.radphyschem.2023.110795	Elsevier Ltd
113	High-intensity laser pulse interaction with a counter propagating electron beam for terahertz field generation in magnetized plasmas	Ashish; Gopal K.; Singh S.; Gupta D.N.	2023	Optical and Quantum Electronics	55	605	10.1007/s11082-023-04889-4	Springer
114	Tunable electronic structure of heterosite FePO4: an in-depth structural study and polaron transport	Banday A.; Shahid R.; Gupta M.; Murugavel S.	2023	RSC Advances	13	18332	10.1039/d3ra01366a	Royal Society of Chemistry
115	Enhanced photovoltaic and sunlight-driven photocatalysis for water purification study of rare-earth and transition-element-doped bismuth ferrites	Arti; Gupta R.; Singh N.; Kansal M.K.; Verma V.	2023	Applied Physics A: Materials Science and Processing	129	645	10.1007/s00339-023-06928-z	Springer Science and Business Media Deutschland GmbH
116	Flexible gel polymer electrolyte comprising high flash point solvent adiponitrile with ethylene carbonate as co-solvent for sodium-ion batteries	Parveen S.; Hashmi S.A.	2023	Journal of Energy Storage	67	107519	10.1016/j.est.2023.107519	Elsevier Ltd
117	The effect of particle size on the radiation dose response of luminescence signals from nanophosphors	Pagonis V.; Polymeris G.S.; Kitis G.; Sahare P.D.	2023	Radiation Measurements	166	106965	10.1016/j.radmeas.2023.106965	Elsevier Ltd
118	Right-handed neutrino pair production via second-generation leptiquarks	Bhaskar A.; Chaurasia Y.; Deka K.; Mandal T.; Mitra S.; Mukherjee A.	2023	Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics	843	138039	10.1016/j.physletb.2023.138039	Elsevier B.V.
119	Measurement of $\tilde{\nu}_\tau$ charged-current inclusive \tilde{t} production in the NOvA near	Acero M.A.; Adamson P.; Agam G.; Aliaga L.; Aliou	2023	Physical Review D	107	112008	10.1103/PhysRevD.107.112008	American Physical Society

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120	Optical properties of donor impurity in Yukawa like potential: application to SiGe/Si and Si/SiGe	Varsha N.; Kria M.; Nautiyal V.V.; Lakaal K.; Laroze D.; PÃ©rez L.M.; Prasad V.; Feddi E.	2023	Physica Scripta	98	55914	10.1088/1402-4896/acc7d5	Institute of Physics
121	Investigation of linear and third-order nonlinear optical properties in a laser-dressed parabolic quantum dot with a hydrogenic donor impurity in the presence of a static electric field	Gambhir M.; Kumar P.; Kumar T.; Mohan M.	2023	Indian Journal of Physics	97	2169	10.1007/s12648-022-02572-0	Springer
122	Searches for heavy neutrinos at multi-TeV muon collider: a resonant leptogenesis perspective	Chakraborty I.; Roy H.; Srivastava T.	2023	European Physical Journal C	83	280	10.1140/epjc/s10052-023-11406-0	Institute for Ionics
123	Position and Orientation dependent Hybridization and Energy transfer of Dipole Emitter around Plasmonic Homodimers	Dahiya A.; Krishnan R.; Senthil Kumar P.	2023	ChemistrySelect	8	e202204272	10.1002/slct.202204272	John Wiley and Sons Inc
124	On the Generalized BCS Equations Incorporating Chemical Potential for the Tc and the Calculation of the Coherence Length of Some Elements and Compressed H3S	Malik G.P.; Varma V.S.	2023	Journal of Low Temperature Physics	211	45	10.1007/s10909-023-02938-6	Springer
125	Mechanoluminescence, thermoluminescence, optically stimulated luminescence and photoluminescence in SrAl2O4:Eu micro- and nanophosphors: effect of particle size and annealing in different atmospheres							

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- Panigrahi A.R.; Sahu A.; Yadav P.; Beura S.K.; Singh J.; Mondal K.; Singh S.K. , (2024) , Nanoinformatics based insights into the interaction of blood plasma proteins with carbon based nanomaterials: Implications for biomedical applications , *International* , Academic Press Inc. , 18761623 , 263
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- Kumar D.; Mahapatro A.K.; Singh S.K. , (2023) , A Potential Landslide Early Warning System Based on Threshold Velocity of 1 mm/min , *International* , Institute of Electrical and Electronics Engineers Inc. , 979-835034167-6 , 1
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- Kharangarh P.R.; Rawal R.; Singh S.; Bhardwaj P. , (2023) , Recent Advancement of Luminescent Graphene Quantum Dots for Energy-Related Applications , *International* , Springer Nature , 25245384 , 147
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12. Chamoli S.K.; Bhushan R.; Pandey A. , (2023) , Exploring shape coexistence in A < 190 nuclei through EM transition rate measurements , *International* , Journal of Physics: Conference Series , 17426588 , 012091

13. Chauhan V.; Vashisht G.; Gupta D.; Upadhyay S.; Kumar R. , (2023) , Metal oxides for plasmonic applications , *International* , Elsevier , 978-032399143-8; 978-032399367-8 , 477

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15. Mishra D. , (2023) , Biomedical applications of perovskite-based materials , *International* , Elsevier , 978-032399529-0; 978-032399530-6 , 367

16. Nathawat R.; Rathore S.S.; Kharangarh P.R.; Devi R.; Kumari A. , (2023) , Synthesis and application of carbon-based nanocomposite , *International* , Elsevier , 978-012822837-1 , 169

17. Chauhan V.; Vashisht G.; Gupta D.; Kumar S.; Kumar R. , (2023) , Atomic layer deposition of ferrite thin films , *International* , Elsevier , 978-012823717-5; 978-012823718-2 , 267

(c.) Journal(s) Published by the Department

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Research Projects

1. SERB – DST , Prof. B. C. Choudhary, Indian Participation in the CMS Experiment at CERN: Maintenance, Operation and Upgradation, 346.00 Lakh

2. SERB – DST , Prof. Kirti Ranjan, Prof. M. Naimuddin, Indian Participation in the CMS Experiment at CERN: Maintenance, Operation and Upgradation , 1505.00 Lakh

3. DST, Prof. B.C. Choudhary, Prof. Debajyoti Choudhury, and Prof. Samit K. Mandal, Indian Institutions – Fermilab Collaboration in neutrino physics, 280.00 Lakh

4. DST , Prof. D. N. Gupta, Fabrication of anti-microbial textile clothing with cold plasma PVD technology , 36.00 Lakh

5. SERB-DST (CRG) , Prof. D. N. Gupta, Exploring quantum electrodynamics plasma at the new laser intensity frontier , 30.00 Lakh

6. SERB – DST , Prof. S. Annapoorni, The role of spacer layer in exchange-coupled bi-phased magnetic multilayers and nano-composites, 20.81 Lakh

7. SERB – DST, Prof. Shyama Rath, Generation and Assessment of Optically Addressable Point Defects in Silicon Carbide for new quantum technologies , 42.46 Lakh

8. UGC-DAE CSR, Prof. Sevi Murugavel , Singular Structural and Charge Transport Properties of Highly Defective Polyanionic Solids, 1.35 Lakhs

9. UGC-DAE CSR and RRCAT, Indore, India , Dr. Sumalay Roy , Magneto-topological insulator interface: Synthesis and structure-property correlation studies, 1.35 Lakhs

10. IoE, University of Delhi , Prof. S. A. Hashmi , Development of eco-friendly sodium-ion storage devices with sustainable carbon electrodes and biodegradable polymer-based electrolytes , 27.00 Lakhs

11. IoE, University of Delhi , Dr. Suman Chowdhury, Exploration of Thermochromism in 2D transition-metal oxides, 3.50 Lakhs

12. IoE, University of Delhi , Dr. Utkarsh Mishra, Finding quantum control methods for high precision magnetic field sensing in quantum many-body systems, 4.00 Lakhs

13. IoE, University of Delhi , Dr. Krishnakanta Mondal, Unravel the Role of d-orbital for CO2 Mitigation, 4.00 Lakhs

14. IoE, University of Delhi , Dr. Archana Mishra, Quantum computing with Yu-Shiba-Rusinov states in superconductors, 4.00 Lakhs

15. Jal Jeevan Mission , Dr. Yana Bagbi, Design of low-cost magnetic bamboo activated carbon impregnated cellulose filtration cartilage for the treatment of metal ions contaminated water, 13.00 Lakhs

16. IoE, University of Delhi , Dr. Sourav Sur, Unified Dark Energy and Dark Matter: A Modified Gravity approach, 4.00 Lakhs

17. IoE, University of Delhi , Dr. Rakesh Kumar Mishra, Role of metallic ions to fabricate DNA templated nanocluster and density distribution effects on the modulation of Nucleic acid (DNA, RNA) structure, 4.00 Lakhs

18. IoE, University of Delhi , Dr. Amol Singh, Comprehensive Doping Investigation of Perovskite Oxides with X-ray Spectroscopy Technique , 5.00 Lakhs

19. SERB – DST, Dr. Amol Singh, Unraveling Electronic Structures of Quantum Materials: A Synchrotron Spectroscopy Study via Resonant Inelastic X-ray Scattering (RIXS), 35.88 Lakhs

Patents Filed/Granted

1. NA and NA

Seminars/Conferences organized by the Department

1. Dr. Hersh Singh , FermiLab, USA, Fermionic anomalies and topological phases on the lattice: Ginsparg Wilson relation and its generalizations, 11-03-2024

2. Prof. Varun Sheel , Senior Professor & Head, Planetary Science Division, Physical Research Laboratory, Ahmedabad, Physical Research Laboratory, Ahmedabad, Planetary Science and Exploration - An Indian Perspective, 02-03-2024

3. Dr. Apratim Chatterji, IISER Pune, IISER Pune, Entropy induced organization: polymer topology drives bacterial chromosome organization within the living cell, 29-02-2024

4. Prof. Susanta Hui, Beckman Research Institute, Department of Radiation Oncology, City of Hope National Medical Center Duarte, Los Angeles, USA, Beckman Research Institute, Department of Radiation Oncology, City of Hope National Medical Center Duarte, Los Angeles, USA, Rediscovering the Role of Radiation in improving hematopoietic stem cell transplant outcomes for hematological diseases, 26-02-2024

5. Dr. Swati Mohan , NASA's Jet Propulsion Laboratory, USA, NASA's Jet Propulsion Laboratory, USA, Mars Exploration, A Journey to Success, 26-02-2024

6. Prof. Chandan K. Mishra, Department of Physics, IIT Gandhinagar, Department of Physics, IIT Gandhinagar, Exploring the Role of Impurities in Colloidal Vapor Deposition: Insights from Nucleation and Growth Kinetics, 20-02-2024

7. Dr. Manoj Kumar , Simons Centre for the Study of Living Machines, National Centre for Biological Sciences - TIFR, Bengaluru, National Centre for Biological Sciences, TIFR, Bengaluru, Soft and active matter to understand and mimic living systems, 06-02-2024

8. Ms. Monica Bello , CERN Switzerland, CERN, Switzerland, Dialogue Across Art & Physics, 02-02-2024

9. Dr. Sunil Malik , University of Potsdam & Deutsches Elektronen- Synchrotron, DESY, Germany, DESY, Germany, Diagnostic for 3D magnetic field and its turbulent characteristics in ISM and extended objects, 17-01-2024

10. Dr. Anish Ghoshal, University of Warsaw, Poland, University of Warsaw, Poland, Dynamical Generation of Dark Matter, Electroweak Scale and

Planck Scale, 12-05-2023

11. Dr. Ranjani Seshadri , Ben-Gurion University of the Negev, Israel, Ben-Gurion University of the Negev, Israel, Engineering Floquet Topological Phases using Periodic Driving, 08-11-2023

12. Prof. Yasuhiro Fukuma , Department of Physics and Information Technology Kyushu Institute of Technology, Japan, Kyushu Institute of Technology, Japan, SPIN CURRENT AND ITS DEVICE APPLICATION, 06-10-2023

13. Dr. Amit Adhikari , Post-Doc, University of Warsaw, Pasteura 5, Warsaw, Poland,, University of Warsaw, Pasteura 5, Warsaw, Poland,, Overview of Higgs boson searches at LHC, 19-07-2023

14. Dr. Satya K. Kushwaha , Associate Director of PARADIM-Bulk Materials Discovery facility, Department of Physics & Astronomy, Johns Hopkins University, 3701 San Martin Dr, Baltimore, MD 21218,, Department of Physics & Astronomy, Johns Hopkins University, 3701 San Martin Dr, Baltimore, MD 21218,, Development of Topological materials and a Fermi liquid state in a topological Kondo Insulator, 19-06-2023

15. Dr. Dibyakrupa Sahoo , Institute of Theoretical Physics Faculty of Physics University of Warsaw, Poland, Institute of Theoretical Physics Faculty of Physics University of Warsaw, Poland, Exploring new avenues to distinguish between Dirac and Majorana neutrinos, 31-05-2023

16. Professor M. Saha Sarkar, Academy of Science, Technology and Engineering for the Masses (ASTEM), Kolkata, Academy of Science, Technology and Engineering for the Masses (ASTEM), Kolkata, Nuclear Science and Modern Society, 06-11-2023

Seminar/Conference Presentations (National/International) by Faculty Members

1. Dr. Govind Dayal Singh, 23-02-2024, Plasmonic nanocavities for molecular vibrational spectroscopy: From weak to strong coupling regime, Recent Advances in Optics and Metamaterials (WROM), IIIT Noida

2. Dr. Suman Chowdhury, 04-11-2023, Introduction to Density Functional Theory and its application in the field of Thermal Transport and Thermoelectricity, International Workshop on Materials Modelling 2023 (IWMM-2023), DonBosco University, Tapesia Gardens, Assam, India

3. Dr. Utkarsh Mishra, 12-02-2024, Localization Driven Quantum Sensing , International conference on quantum technologies, MAHE, UDUPI Karnataka

4. Dr. Utkarsh Mishra, 04-12-2023, Driving Enhanced Quantum Sensing in Partially Accessible Many-Body Systems, Quantum Information Processing and Applications (QIPA-2023), HRI, Prayagraj (Allahabad)

5. Dr. Utkarsh Mishra, 14-03-2024, Many-Body Quantum Sensors , SPS JNU March Meeting , School of Physical Sciences JNU New Delhi

6. Dr. Krishnakanta Mondal, 09-05-2023, Global Optimization using Basin Hopping Method, MULTISCALE MODELING OF MATERIALS IN CARBON RELATED NANOSTRUCTURES, Central University of Haryana, Mahendergarh, Haryana

7. Dr. Archana Mishra, 27-11-2023, Controlling Majorana hybridization in magnetic chain-superconductor systems, Quantum Condensed Matter-2023, NISER, Bhubaneswar, Odisha

8. Dr. Sourav Sur, 05-12-2023, A unified cosmological dark sector from a Bose-Einstein Condensate, Invited talk, Department of Physics and Astrophysics University of Delhi

9. Dr. Sourav Sur, 04-07-2023, Cosmological aspects of Mimetic-Metric-Torsion Gravity, Invited talk, Department of Mathematics, Jadavpur University, Kolkata

10. Dr. Sourav Sur, 13-06-2023, A unified cosmological dark sector from a Bose-Einstein condensate., McDonald Research Partnership-Building Workshop: New insights into particle physics from quantum information and gravitational waves, University of Lethbridge, Alberta, Canada

11. Dr. Vikram Rathee, 29-10-2023, Shear Thickening Suspensions: Exploring Ideal Particulate, International Conference on Materials for Energy & Sustainable Development, MESD 2023, Energy & Sustainable Development

National/International MoUs Signed

a. The University has just signed an MoU with the HSE University of Russia (primarily St. Petersburg campus).

Social Outreach Programme

The Physics Society of Department of Physics and Astrophysics, University of Delhi celebrated the National Science Day 2024 by organizing the following events on 27th and 28th February, 2024:

(1) Talks by eminent physicists Prof. T.R Sheshdari and Prof. Susmita Saha.

(2) A Quiz, open to all registered participants.

(3) Poster presentations by PG/PhD students.

(4) Visit to the sky observatory.

(5) A science circus.

Student's Achievements

NA

Other Inter-Institutional Collaborations

NA

No. of Students under Exchange Programme

Information Not available

Placement Details (Number and percentage of students placed)

0

Extension and Outreach Activities

1. The department has organized the Memorial Lecture on "Life and Work of Prof. A.N. Mitra".

Speaker: Prof. N. Panchapakesan, Retired-Professor, Department of Physics and Astrophysics, University of Delhi.

Date/Time and Venue: Monday, 17 April 2023, DSKL Hall, Department of Physics and Astrophysics, University of Delhi.

2. The Department has organized "14th Dr. B.N. Singh Memorial Lecture".

Title of the lecture: "Quantum Metrology: Interdisciplinary opportunities".

Speaker: Prof. Venu Gopal Achanta, Director, National Physical Laboratory, New Delhi.

Date/Time and Venue: Tuesday, 12 March 2024, 3.00 PM, DSKL Hall, Department of Physics and Astrophysics, University of Delhi.

Faculty Strength

Senior Professor/Professor/Director. 33

Associate Professor. 3

Assistant Professor. 15 + 2 under UGC-FRP

Ad-hoc. 3 INSPIRE Faculty Members

Guest. 0

Number of Ph.D. Degrees Awarded

25

Number of M.Phil. Degrees Awarded

NA

Other Significant Information

In Section-1, under publications, the CSV file pertaining only to the Scopus Indexed ones has been uploaded. Neither Web-of-Science nor UGC-Care provide a department-wise publication list, and therefore Not Applicable (NA).