



SRM
UNIVERSITY AP
—Andhra Pradesh

DEPARTMENT OF

PHYSICS

SRM UNIVERSITY-AP, ANDHRA PRADESH



About

Physics is the most fundamental science that deals with the properties and interactions of matter and radiation. Understanding the world around us, including modern technological advancements, is based on centuries of developments in physics. As such, physics provides the basis for all applied sciences and technologies.

Currently the Department of Physics at SRM University-AP, Andhra Pradesh offers the Bachelor of Science Physics (Honours) with Research (BSc Physics (H)), Master of Science (MSc) and PhD graduate program in physics. The academic programs give the students a solid foundation in skills like problem-solving, observation skills, numerical aptitude, practical thinking, and reasoning ability. Physics with a minor in another programme can lead to a variety of careers, which the students can choose after the completion of the programme. The department also encourages research opportunities for undergraduate students, as well as graduate students, in several areas of experimental and computational/theoretical physics.

HIGHLIGHTS

5.48 Cr

Total Outlay for
Research Projects

237

Research
Publications

21

Govt. Funded
Projects

165

Q1 Journal
Publications

17+

Nature Index Journal
Publications

10

Patents

Vision

The Department of Physics aims to provide stimulating, elevating, and problem-oriented programmes of study in basic and applied physics. All the courses are designed in accordance with scientific as well as industrial research and are taught by faculty members in the relevant fields of research.

Mission

The mission of Physics department is to teach and learn physics in through interactive, collaborative, performance, and project-based pathway. Physics majors and minors have effective curricula, with a depth of study for students to pursue physics and engineering at the undergraduate level. The students can embark on a career in technology or science education, both in industry and higher education.

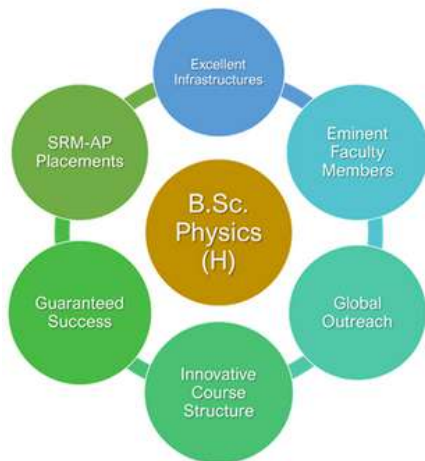
Academic Programmes

BSc (Hons) Physics

BSc (Hons) Physics is a four-year program with **160 credits**.

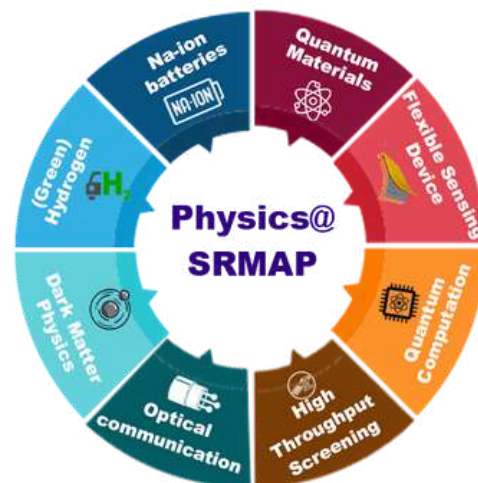
BSc (Hons) Physics curriculum is designed considering the fundamental aspect of Physics and is application-oriented for skill development. The laboratory classes are designed to provide as much hands-on experience in the area of Applied Physics. The project courses and industrial visits will provide exposure to the students in the desired advanced scientific and technological area.

Courses such as **Quantum Mechanics, Solid State Physics, Statistical Mechanics and Astrophysics & Cosmology** will help to a strong base in Physics, whereas the course such as “**Quantum Computation,, Battery materials, training In LabVIEW software and Physics of financial markets**” will help students to choose a career path in communication, device industry and higher studies in world-class universities.



MSc Physics

MSc Physics at SRM University-AP, Andhra Pradesh delivers quality education in physics to students through well-designed courses on fundamental topics of technological importance. The department facilitates developing expertise in Quantum Technology by learning courses such as Quantum Information and Computation, Quantum Optics or Condensed Matter Physics with courses such as Instrumentation & Experimental Physics, Spintronics, and Nano-Magnetism and Astrophysics & Cosmology.



Industry knowledge and engagement in essential fields of Physics including Data Sciences in Complex Systems, and Renewable Energy and Storage Devices highlight the department's industry-oriented pedagogy. Students will acquire abilities and soft skills that encourage research and development activities and are useful in everyday life.

PhD Physics

Department of Physics offers full-time PhD degree programme in various emerging research areas of Applied Physics. The objective of the programme is to guide scholars in an innovative way to become top-class researcher in various fields of study leading to a PhD degree. A vibrant research atmosphere with state-of-the-art research facilities will be provided. Students will have the opportunity to work with high-profile faculty advisors. The details of PhD admission can be found out at <https://srmap.edu.in/research-home/phd-programme/>

Curriculum Highlights

- Flexible Curriculum (NEP 2020 Compliance)
- Industry Oriented Courses for Employability
- Soft Skill Courses
- Emphasis on Cutting Edge Research

Scopes and Opportunities

- The Department's national and international collaboration is strong. The student will get exposure through faculty members.
- The faculty members are expert in training students and has a commendable track record in teaching and research.
- Learning Environment and easy accessibility of faculty members to discuss doubts and career paths.
- Problem-based curricula to help in clearing National and international level exams (e.g. NET, GATE, JEST, GRE).
- Wide choices of Minor/elective subjects and can take part in research projects in cutting-edge areas of research.
- Internship (National and International institutes) and can take part in university placements.
- Higher studies in reputed institutes (National and international).
- Placement opportunities in public sector units such as BHEL, DRDO, ISRO, BARC and many more private sector Semiconductor, Telecommunications and battery industries.

Scholarship Schemes

BSc (Hons) Physics

Category	Annual Tuition Fee (INR)	Eligibility			
		JEE Percentile	Scholarship Exam (score in %age)	12th average- CBSE/ICSE (score in %age)	12th average- Other boards (score in %age)
Category A Fees	₹ 0	95+	95+	95+	98+
Category B Fees	₹ 42,500	90-94.99	90-94.99	90-94.99	95-97.99
Category C Fees	₹ 80,000	70-89.99	70-89.99	70-89.99	75-94.99
Category D Fees	₹ 155,000	<70	<70	60-69.99	60-74.99

[†]There are limited seats available for each category. Basic eligibility criteria needs to be adhered for all categories

MSc Physics

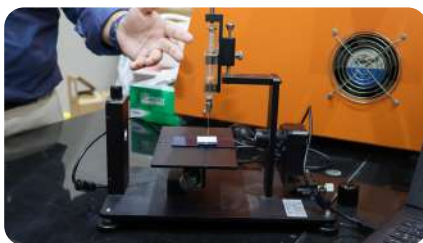
Category	Fee (INR)	Eligibility	
		UG Percentage	UG CGPA
Category A Fees	Rs. 0 (100% Merit Based Tuition Fee Aid)	85% -Above	9 Above
Category B Fees	Rs. 25,000 (75% Merit Based Tuition Fee Aid)	75-84.99%	8-8.99
Category C Fees	Rs. 50,000 (50% Merit Based Tuition Fee Aid)	65-74.99%	7-7.99
Category D Fees	Rs. 1,00,000	60-64.99%	6-6.99

[†]There are limited seats available for each category. Basic eligibility criteria need to be adhered for all categories.

Academic and Research Labs

The academic and research laboratories are equipped with advanced instruments with **updated research and industrial relevance**.

Academic Labs



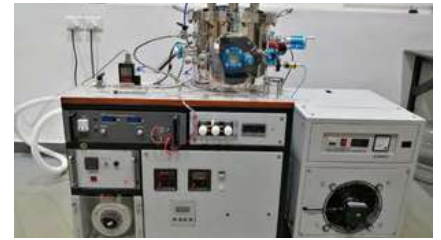
Research Labs



**Powder X-Ray
Diffractometer**



High temperature Furnaces



**Sputtering cum and
thermal evaporation unit**



**Impedance/Dielectric/Pyroelectric
Current Measurement**

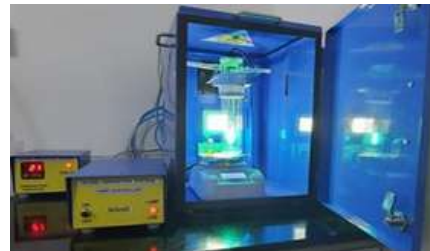


Photo Chemical Reactor



HPCC- VENUS



**LCR Meter HT- Set Up & LCR
meter**



**Low Temperature
Probe Station**



**Deposition
furnace (LPCVD)**



**Spin Coating Unit & UV
Ozone Cleaner**



**Source-Measurement Unit (SMU) & Sub-
femtoamp Remote SourceMeter**



**Ferroelectric/
Piezoelectric
Analyzer**



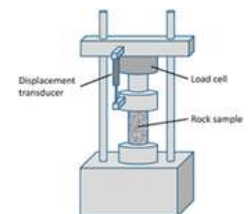
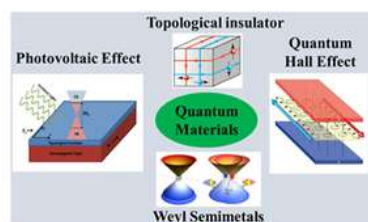
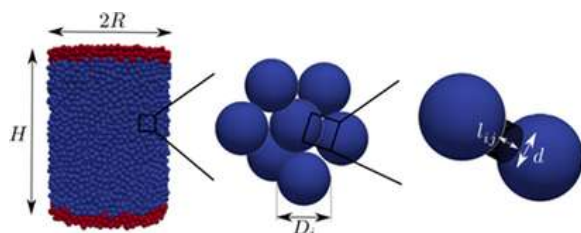
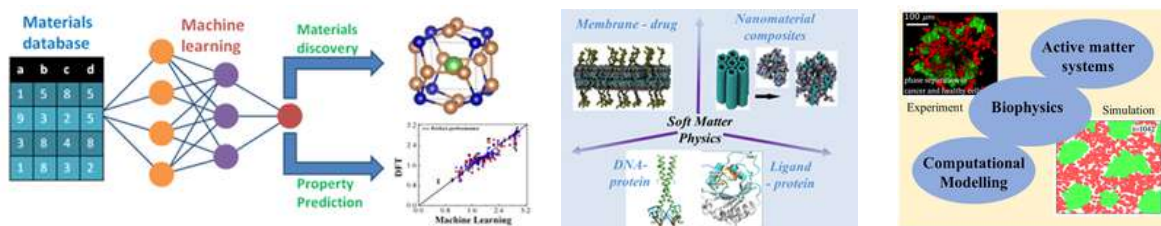
Impedance Analyzer & LCR Meter

Research Area

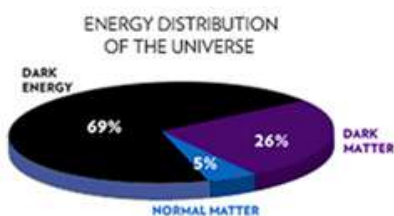
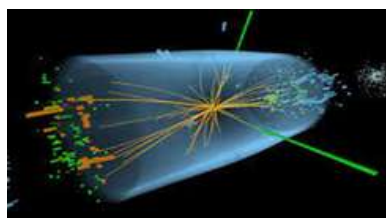
Advanced Materials and Device Applications



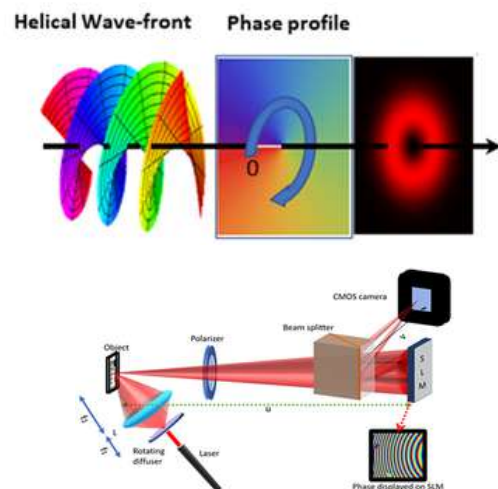
Computational Materials and Soft Matter Physics



High Energy Physics



Laser Physics and Photonics



Achievements of UG Students

Mr Bennet Benny (BSc Physics with Research):

- With 100% EMJM Scholarship to pursue QuanTEEM Masters across 4 Universities - Bourgogne Franche-Comté France, Technische Universität Kaiserslautern, Germany, Aarhus Universitet, Denmark and Moscow Institute of Physics And Technology, Russia.
- Sakura Internship Program 2019 at the Japan Advanced Institute of Science and Technology (JAIST), Japan for research work.

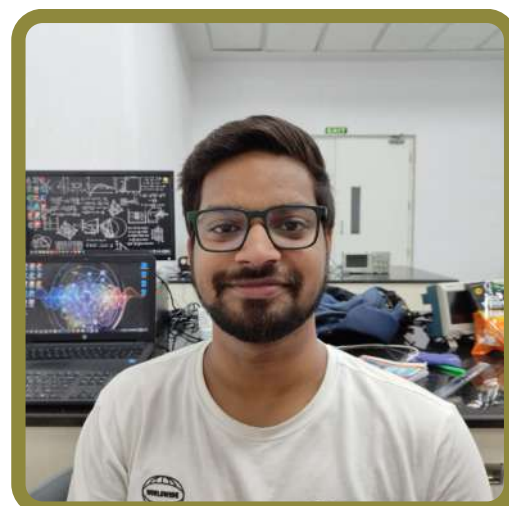


Sreelekha Bhuvaneswari (BSc Physics with Research):

- One-year internship for a research project at the National University of Singapore (NUS), Singapore 2022.
- Published a patent titled “A fibre material with moisture retention capacity with thermal tolerance and a method for manufacture” Application number - 202141023375 (2021).
- Fully funded Scholarship for masters in Physics at Sapienza University Rome Italy.

MD Shoaib (BSc Physics with Research):

- Three month Internship on Quantum science and technology at National Changhua University of Education Taiwan with 500 USD per month.
- Opportunity to attend Summer School on Quantum Cryptography, University of Gdańsk, Poland.



Achievements of PhD Students



M Vanitha (PhD student): Ms Vanitha secured Post Doctoral Position at Physical Research Laboratory under Department of Space ISRO, India

Dr Deepak S Gavali (PhD student): Dr Deepak S Gavali secured Postdoctoral position at Sejong University Seoul, South Korea



Ms Ashwini Nawade (PhD student): Ms Ashwini Nawade secured a job at iNurture Education Solutions

Dr Samadhan Kapse (PhD student): Dr Samadhan Kapse secured Postdoctoral position at the University of Barcelona, Spain



Anjana Tripathi (PhD student): Dr Anjana secured a postdoctoral position at Denmark Technical University, Denmark

Selected Research Publications...

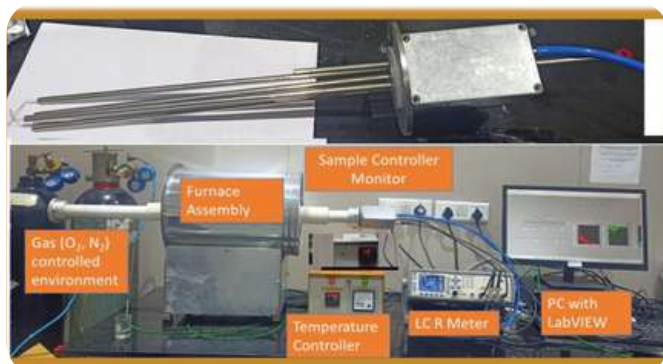
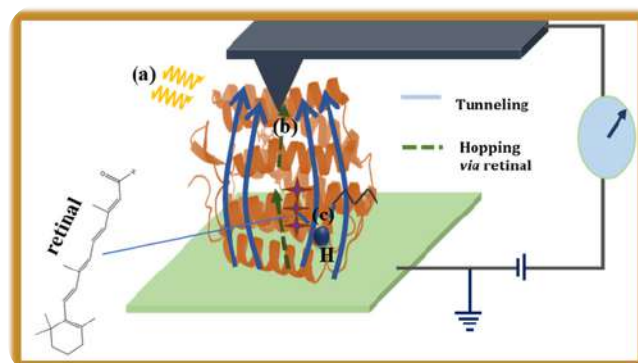
- **K. R. Achary, Y. B. Rao, K. R. Kumar, L. N. Patro**, Mechanochemical Synthesis and Fluoride Ion Conductivity Studies in SrSnF₄ Polymorphs, **The Journal of Physical Chemistry C**, 127, 7816 (2023). [\[IF: 4.177\]](#).
- **A. Chakraborty**, S. Dasmahapatra, H. Day-Hall, B. Ford, S. Jain, S. Moretti, Fat b-Jet Analyses Using Old and New Clustering Algorithms in New Higgs Boson Searches at the LHC, *The European Physical Journal C*, 83, 347 (2023). [\[IF: 4.59\]](#).
- **V. C. Mandapati, H. Vardhan**, S. Prabhakar, Sakshi, **R. Kumar, S. G. Reddy**, R. P. Singh, K. Singh, Multi-User Nonlinear Optical Cryptosystem Based on Polar Decomposition and Fractional Vortex Speckle Patterns, *Photonics*, 10, 561 (2023). [\[IF: 2.536\]](#).
- Lewis acid-dominated aqueous electrolyte acting as co-catalyst and overcoming N₂ activation issues on catalyst surface, A. Biswas, **S. Kapse**, B. Ghosh, **R. Thapa**, R. S. Dey, **PNAS**, 119, 33 (2022). [\[IF: 12.779\]](#).
- Resonant Second-Harmonic Generation as a Probe of Quantum Geometry, **P. Bhalla**, K. Das, D. Culcer, A. Agarwal, **Physical Review Letters**, 129, 227401 (2022).. [\[IF: 9.185\]](#).
- Alicia María Manjón-Sanz T. Wesley Surta, **Pranab Mandal**, Alex J. Corkett, Hongjun Niu, Eiji Nishibori, Masaki Takata, John Bleddyn Claridge, Matthew J. Rosseinsky, Complex Structural Disorder in a Polar Orthorhombic Perovskite Observed through the Maximum Entropy Method/Rietveld Technique, **Chemistry of Materials**, 34, 29 (2022). [\[IF: 10.508\]](#).
- **I. Uddin, S. M. Abzal, K. Kalyan, S. Janga**, A. Rath, R. Patel, D. K. Gupta, T. R. Ravindran, H. Ateeq, M. S. Khan, **J. K. Dash**, Starch assisted synthesis of Bi₂S₃ nanoparticles for enhanced dielectric and antibacterial applications, **ACS Omega**, 7, 42438 (2022). [\[IF: 4.132\]](#).
- **K. Ramya**, A. Mondal, S. Gupta, **S. Mukhopadhyay**, Asymmetrical Electrical Performance across Different Planes of Solution-Grown MAPbBr₃ Crystals of mm Dimensions, **ACS Omega**, 7, 42138 (2022). [\[IF: 4.132\]](#).
- Success of Social Inequality Measures in Predicting Critical or Failure Points in Some Models of Physical Systems A. Ghosh, **S. Biswas**, B. K Chakrabarti, **Frontiers in Physics**, 10, 990278 (2022). [\[IF: 3.5\]](#).

Selected Patents

Modulation of optoelectronic and mechanical properties across (bio) molecular junctions under external stimuli

M. Sabyasachi, N. Ashwini

Application No - 202141017530
published - (2021).



A method and set-up for characterisation of temperature dependence of impedance, pyroelectric current

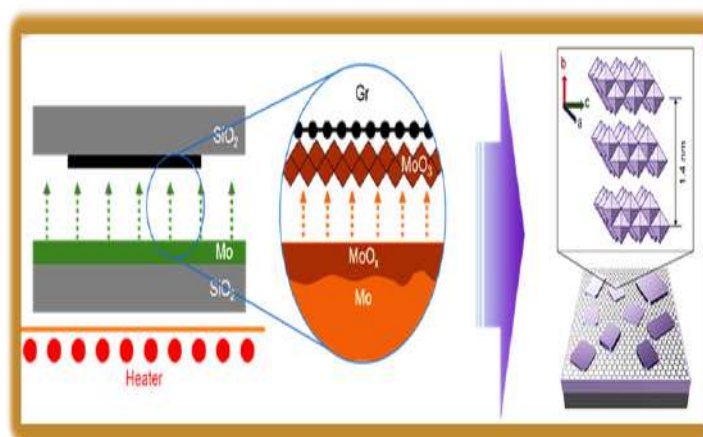
P. Mandal, P. Tulasi Rao, K. N. Malleswari and C. Dey

Application No - 202241005220
published - (2021).

Two-Dimensional Transition Metal Oxide Layers and A method for their Synthesis

J. K. Dash, S. M. Abzal, K. Kurapati, S. L. Janga

Application No - 202241005220
granted- (2023).



Faculty Members



Prof. Ranjit Thapa

Professor and Dean (i/c) - SEAS

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149

Publications

7

Projects

3865

Citations

34

H-Index

RESEARCH INTERESTS

1. Quantum Mechanics/Machine Learning
2. Catalyst: Theory
3. Carbon and Boron Based Materials

SELECTED PUBLICATIONS

1. **A. Tripathi, R. Thapa**, Optimizing CO₂RR selectivity on Single Atom Catalysts using Graphical Construction and Identification of Energy Descriptor, **CARBON**, 208, 330 (2023). [IF: 11.307].
2. **D. S. Gavali, R. Thapa**, Identification of Borophosphene/graphene heterostructure as anode for Li-ion Batteries and its origin, **Journal of Power Sources**, 566, 232947 (2023). [IF: 9.794].



Dr Pranab Mandal

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36

Publications

2

Projects

2281

Citations

21

H-Index

RESEARCH INTERESTS

1. Materials synthesis
2. Piezoelectrics and ferroelectrics
3. Magnetoelectric multiferroics

SELECTED PUBLICATIONS

1. P. Tulasirao, K. N. Malleswari, P. Mandal, Probing oxide ion conductivity in Na_{0.5}Bi_{0.5}TiO₃-BiFeO₃-BaTiO₃-based ferroelectric materials, **ACS Applied Energy Materials**, 6, 5009 (2023), [IF: 6.959].
2. N. K. Malleswari, P. Tulasirao, **P. Mandal** A Measurement Setup for Characterization of Temperature Dependence of Impedance, Dielectric Permittivity, and Pyroelectric Current Under a Controlled Environment **J. Electron. Mater.** 52, 1625 (2023) [IF: 2.047].



Dr Sabyasachi Mukhopadhyay

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30

Publications

2

Projects

2131

Citations

12

H-Index

RESEARCH INTERESTS

1. Optoelectronic Materials
2. Molecular Electronics
3. Atomic Force Microscopy

SELECTED PUBLICATIONS

1. **A. Nawade**, K. B. Busi, **K. Ramya**, **S. Mukhopadhyay**, S. Chakraborty, Improved Charge Transport across Bovine Serum Albumin – Au Nanoclusters Hybrid Molecular Junction, **ACS Omega**, 7, 20906 (2022). *[IF: 4.132]*.
2. **K. Ramya**, **S. Mukhopadhyay**, Modulation of optoelectronic and mechanical properties across (bio) molecular junctions under external stimuli, **J. Electron. Mater.**, 52, 1609 (2023). *[IF: 2.09]*.



Dr Jatis Kumar Dash

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34

Publications

2

Projects

688

Citations

16

H-Index

RESEARCH INTERESTS

1. 2D materials and device applications
2. Metal/Semiconductor heterostructures
3. Thermoelectric materials and devices

SELECTED PUBLICATIONS

1. I. Uddin, S. M. Abzal, K. Kalyan, S. Janga, A. Rath, R. Patel, D. K. Gupta, T. R. Ravindran, H. Ateeq, M. S. Khan, **J. K. Dash**, Starch assisted synthesis of Bi₂S₃ nanoparticles for enhanced dielectric and antibacterial applications, **ACS Omega**, 7, 42438 (2022). *[IF: 4.132]*.
2. Uddin, SM Abzal, K. Kalyan, S. Janga, R. Patel, **J. K. Dash**, Starch-Assisted Stable Synthesis of CdS Nanoparticles for Enhanced Electrical and Optical Properties, **J. Electron. Mater.** 52, 1710 (2023), *[IF: 2.047]*.



Dr Johannes Kirscher

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18

Publications

322

Citations

8

H-Index

RESEARCH INTERESTS

1. Universal properties of few-body systems
2. Effective Field Theories
3. Quantum dynamics in classical, extreme background fields

SELECTED PUBLICATIONS

1. **J. Kirscher**, Brian C. Tiburzi, Two particles with zero-range interaction in a magnetic field, **Phys.Lett.B** 819 (2021) 136462 (2022).
2. L. Contessi, **J. Kirscher**, M. P. Valderrama, Emergent four-body parameter in universal two-species bosonic systems, **Phys.Lett.A** 408, 127479 (2021).



Dr Gangi Reddy Salla

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29

Publications

1

Projects

506

Citations

13

H-Index

RESEARCH INTERESTS

1. Scalar and vector optical vortex beams
2. Free space optical communication
3. Polarization speckles

SELECTED PUBLICATIONS

1. Kaarthik, C. Kaushiga, G. Sradha, Nayak Ram, **S. G. Reddy**, K. C. Sekhar, A. Venkateswarlu, Improvement of energy storage density and energy harvesting performance of amphoteric Pr ion-modified lead-free BCZT ceramics, **Journal of Alloys and Compounds**, 943, 169069 (2023), [\[IF: 6.371\]](#).
2. M. Bhargavi, S. Shailesh, J. Kaarthik, C. Kaushiga, P. Vanitha, **S. G. Reddy**, A. Venkateswarlu, Effect of Vacuum Heat Treatment on Structural, Optical, and Magneto-electric Properties in Bi-doped Y3Fe5O12 Ceramics, **Journal of Magnetism and Magnetic Materials**, 575, 170669 (2023), [\[IF: 3.097\]](#).



Dr Laxmi Narayana Patro

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31

Publications

2

Projects

377

Citations

13

H-Index

RESEARCH INTERESTS

1. Solid state ionics
2. Materials for solid state batteries and chemical sensors
3. Nonlinear conductivity

SELECTED PUBLICATIONS

1. Y. B. Rao, K. R. Achary, K. K. Bharathi, **L. N. Patro**, Enhanced ionic conductivity of Na-excess $\text{Na}_3\text{Zr}_2\text{Si}_2\text{PO}_{12}$ solid electrolyte by tuning its elemental composition and sintering temperature, **Journal of Materials Science**, 58, 2222 (2023). [IF: 4.682].
2. Y. B. Rao, K. R. Achary, **L. N. Patro**, Enhanced electrochemical performance of the $\text{Na}_3\text{V}_2(\text{PO}_4)_3/\text{C}$ cathode materials upon doing with Mn/Fe for Na-ion batteries, **ACS omega**, 7, 48192 (2022). [IF: 4.132].



Dr Siddhartha Ghosh

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23

Publications

1

Projects

566

Citations

10

H-Index

RESEARCH INTERESTS

1. Physics at the interfaces
2. Wettability studies of metal-oxide thin-film
3. Nano-magnetism

SELECTED PUBLICATIONS

1. G. K. Dalapati, H. Sharma, A. Guchhait, N. Chakrabarty, P. Bamola, Q. Liu, G. Saianand, A. M. S. Krishna, S. Mukhopadhyay, A. Dey, T. K. S. Wong, S. Zhuk, **S. Ghosh** et. al., Tin oxide for optoelectronic, photovoltaic and energy storage devices: a review, **J. Mater. Chem. A**, 9, 16621 (2021). [IF: 14.51].
2. H. Jani, L. Jiajun, S. Hooda, R. V. Chopdekar, C. Li, G. Ji Omar, S. Prakash, D. Yonghua, P. Yang, A. Banas, K. Banas, **S. Ghosh**, S. Ojha, D. Kanjilal, A. Ariando, S. J. Pennycook, E. Arenholz, P. G. Radaelli, J. M. D. Coey, Y. P. Feng, T. Venkatesan, Reversible hydrogen-ion control of room temperature antiferromagnetic state in $\alpha\text{-Fe}_2\text{O}_3$, **Nature Communication**, 12, 1668 (2021). [IF: 17.69].



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51

Publications

2

Projects

1935

Citations

23

H-Index

RESEARCH INTERESTS

1. Heterogeneous catalysts
2. Ion beam applications
3. Functional nanostructures

SELECTED PUBLICATIONS

1. A. Nimmala, A. P Pathak, M G. Krishna, **M. Motapothula**, V. S. N. R. Sunkaranam, Radiation Response of HfO x-Based Resistive Random Access Memory (RRAM) Devices, **ACS Applied Electronic Materials**, 4, 5594 (2022), [IF: 4.16].
2. K. Huang, L. Wu, M. Wang, N. Swain, **M. Mallikarjuna**, Tailoring magnetic order via atomically stacking 3d/5d electrons to achieve high-performance spintronic devices, **Applied Physics Reviews**, 7, 011401 (2020), [IF: 17.054].



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44

Publications

1

Projects

838

Citations

14

H-Index

RESEARCH INTERESTS

1. Statistical physics, complex systems, machine learning
2. Fracture, breakdown, earthquakes
3. Multi-agent modes of society

SELECTED PUBLICATIONS

1. A Ghosh, BK Chakrabarti, DRS Ram, M Mitra, R Maiti, **S Biswas**, S Banerjee, Scaling behavior of the Hirsch index for failure avalanches, percolation clusters, and paper citations, **Frontiers in Physics**, 10, 1145 (2022). [IF: 3.718].
2. Diksha, **S. Biswas**, Prediction of imminent failure using supervised learning in a fiber bundle model **Physical Review E** 106 (2), 025003 (2022). [IF: 2.707].



Dr Amit Chakraborty

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22

Publications

1

Projects

479

Citations

15

H-Index

RESEARCH INTERESTS

1. Theoretical Particle Physics
2. Higgs Boson and Dark Matter Phenomenology
3. Beyond Standard Model using ML

SELECTED PUBLICATIONS

1. **A. Chakraborty**, S. Dasmahapatra, H. D.-Hall, B. Ford, S. Jain, S. Moretti, Fat b-Jet Analyses Using Old and New Clustering Algorithms in New Higgs Boson Searches at the LHC, **European Physical Journal C**, 83, 347 (2023). [\[IF: 4.59\]](#).
2. **A. Chakraborty**, S. Dasmahapatra, H. A. D.-Hall, B. Ford, S. Jain, S. Moretti, E. Olaiya, C.H. S.-Themistocleous, Revisiting Jet Clustering Algorithms for New Higgs Boson Searches in the Hadronic Final States, **European Physical Journal C**, 82, 346 (2022). [\[IF: 4.991\]](#).



Dr Supravat Dey

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17

Publications

347

Citations

10

H-Index

RESEARCH INTERESTS

1. Statistical Physics
2. Soft-matter
3. Biophysics

SELECTED PUBLICATIONS

1. Oriana Q. H. Zinani, Kemal Keseroğlu, **S. Dey**, Ahmet Ay, Abhyudai Singh, Ertuğrul M. Özbudak, Gene copy number and negative feedback differentially regulate transcriptional variability of segmentation clock genes, **iScience**, 25, 104579 (2022). [\[IF: 6.107\]](#).
2. Z. Zhang, **S. Dey**, A. Singh, Modeling noise propagation in time-delayed auto-inhibitory genetic circuits, **IFAC-PapersOnLine**, 55, 552 (2022). [\[IF: 1.132\]](#).



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14

Publications

1

Projects

235

Citations

7

H-Index

RESEARCH INTERESTS

1. Computational Biophysics
2. Statistical Physics
3. Rare Events Sampling

SELECTED PUBLICATIONS

1. **D. Pramanik**, A Pawar, S Roy and J K Singh, Mechanistic insights of key host proteins and potential repurposed inhibitors regulating SARS-CoV-2 pathway, **J Comput Chem**, 43, 1237 (2022), [IF: 3.376].
2. Amit Kumawat, S. Namsani, **D. Pramanik**, Sudip Roy and Jayant K. Singh, Integrated docking and enhanced sampling based selection of repurposing drugs for SARS-CoV-2 by targeting host dependent factors, **Journal of Biomolecular Structure and Dynamics**, 40, 9897 (2022), [IF: 4.15].



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22

Publications

1

Projects

190

Citations

9

H-Index

RESEARCH INTERESTS

1. Topological Quantum Materials
2. Transport/optical properties in 2D materials
3. Many body physics

SELECTED PUBLICATIONS

1. **P. Bhalla**, K. Das, D. Culcer, A. Agarwal, Resonant Second-Harmonic Generation as a Probe of Quantum Geometry, **Phys. Rev. Lett.** 129, 227401 (2022), [IF: 9.161].
2. **P. Bhalla**, K. Das, A. Agarwal, D. Culcer, Quantum kinetic theory of nonlinear optical currents: Finite Fermi surface and Fermi sea contributions, **Phys. Rev. B**, 107, 165131 (2023), [IF: 3.908].



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36

Publications

1

Projects

468

Citations

14

H-Index

RESEARCH INTERESTS

1. Optical Information Processing
2. Digital Holography
3. Computational Optical Imaging

SELECTED PUBLICATIONS

1. **R. Kumar**, V. Anand, J. Rosen, 3D single shot lensless incoherent optical imaging using coded phase aperture system with point response of scattered airy beams, **Scientific Reports** (Nature Portfolio) 13, 2996 (2023). *[IF: 4.996]*.
2. Sachin, **R. Kumar**, P. Singh, Multiuser optical image authentication platform based on sparse constraint and polar decomposition in Fresnel domain, **Physica Scripta**, 97, 11 (2022). *[IF: 3.08]*.



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18

Publications

201

Citations

10

H-Index

RESEARCH INTERESTS

1. Semiclassical Gravity Theories
2. Unruh- Fulling Effect and its Applications
3. Relativistic Quantum Information & Quantum Gravity Phenomenology

SELECTED PUBLICATIONS

1. **A. Das**, S. Sen, S. Gangopadhyay, Virtual transitions in an atom-mirror system in the presence of two scalar photons, **Physical Review D**, 107, 2, 025009, (2023). *[IF: 5.407]*.
2. **A. Das**, Bibhas R. Majhi, Unruh-Fulling effect in nonlocal field theory: The role of Unruh decomposition, **Physical Review D**, 106, 10, 105025, (2022). *[IF: 5.407]*.



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11

Publications

1

Projects

116

Citations

7

H-Index

RESEARCH INTERESTS

1. First principles electronic & magnetic structure calculation
2. Study of strongly correlated materials
3. Machine learning assisted materials prediction

SELECTED PUBLICATIONS

1. **A. Halder**, S. Das, P. Sanyal, T. S.-Dasgupta, Understanding Magnetism in Double Double Perovskites: A Complex Multiple Magnetic Sublattice System, **Scientific reports** 11, 1 (2021). *[IF : 4.996]*.
2. A. Droghetti, M. M. Radonjic., **A. Halder**, I. Rungger and L. Chioncel, Editors' Suggestion: DFT+ $\Sigma 2$ method for electron correlation effects at transition metal surfaces, **Phys. Rev B** 105, 115129 (2022). *[IF: 3.908]*.

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