



# Alok Kumar Pan

Associate Professor, Department of Physics

Office Room No. 23 (Second floor), Department of Chemistry; Institute Email: [akp@phy.iith.ac.in](mailto:akp@phy.iith.ac.in)

## Major Areas of Research:

Quantum Information, Quantum Communication and Cryptography, Quantum Metrology

## Major sponsored projects:

DST-ICPS mission mode project, MEiTY-Amazon

Qcal project , SERB Core research grant

## Major Research Facilities in the Group:

Mathematical and Theoretical expertise required for quantum communication, computation and metrology.

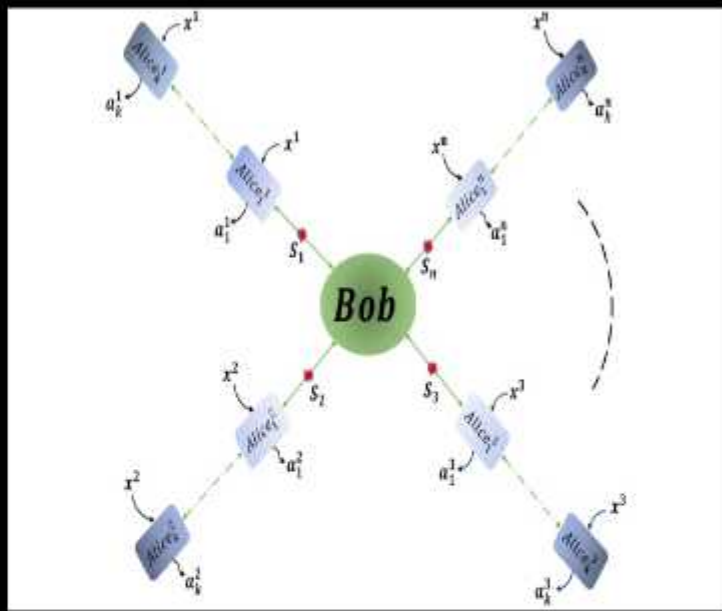
## Most significant Publications:

Discriminating mirror symmetric states with restricted contextual advantage”  
S. Mukherjee, S. Naonit and A. K. Pan, **Phys. Rev. A**, **106**, 012216 (2022).

”Generalized non-n-locality inequality in quantum network”  
S. Munshi and A. K. Pan, **Phys. Rev. A**, **104**, 042217 (2021).

Revealing universal quantum contextuality through communication game”

A.K. Pan, **Scientific Reports**, **9**, 1-8 (2019).





**Anjan Kumar Giri**

**Professor, Department of Physics**

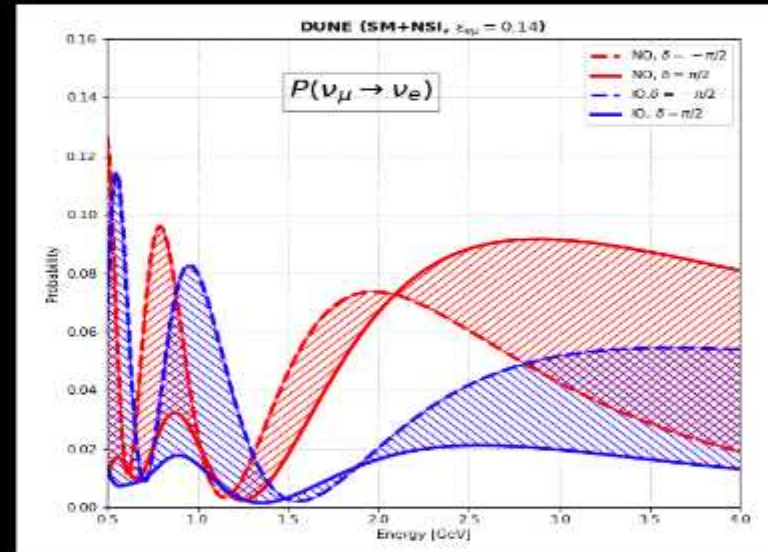
A-407; Office Phone No-23016701; Email:giria@phy.iith.ac.in; Webpage:<https://www.iith.ac.in/phy/giria>

**Major Areas of Research/Up to 3 major sponsored projects:**

I am working in the area of Flavour Physics and CP violation, B Physics, Neutrino Physics and to decipher the signals of Physics beyond the Standard Model

**Major Research Facilities in the Group:**

Primarily I deal with Phenomenology, also a member of Belle and NOvA using analytical and computational methods



**Technology/Product Developed/Up to 3 most significant Publications**

1. Exploring nonstandard interactions effects in DUNE and T2HK, B. Brahma and A. Giri, Euro. Phys. J. C 82, 1145 (2022)
2. Implications of light Z' on the semileptonic B(Bs) decays at large recoil, M. Mohapatra and A. Giri, Phys. Rev. D 104, 095012 (2021)



భారతీయ సాంకేతిక విజ్ఞాన సంస్థ హైదరాబాద్  
भारतीय प्रौद्योगिकी संस्थान हैदराबाद  
Indian Institute of Technology Hyderabad



# Anupam Gupta

Assistant Professor, Department of Physics

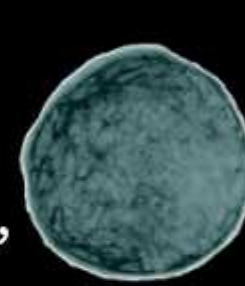
B-312; Office Phone No. (040)2301-6719; agupta@phys.iith.ac.in

## Major Areas of Research/Up to 3 major sponsored projects

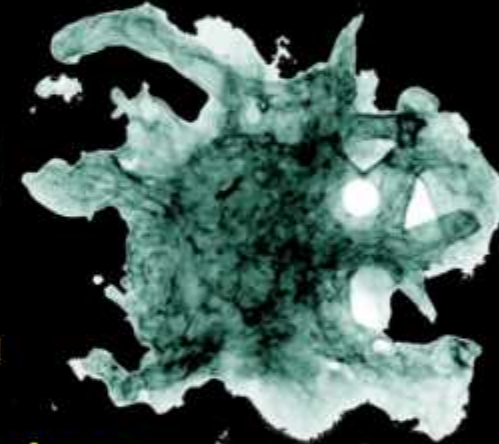
- 1) Mathematical modelling of complex systems such as Tissue Growth and Morphogenesis.
- 2) Agent based modelling of chemotactic agents in turbulent environment.
- 3) Bacterial and polymeric turbulence.

## Major Research Facilities in the Group

- 1) Agent based model for tissue growth.
- 2) Pseudo-Spectral solver for Navier-Stokes Equation, Viscoelastic flows, two-phase flow, mass transport.
- 3) Vertex model for the tissue growth.
- 4) Continuum model for the tissue growth.



Tissue Growth



## Technology/Product Developed/Up to 3 most significant Publications

- 1) Matrix viscoelasticity controls spatio-temporal tissue organization. A. Elosegui-Artola\*, A. Gupta\*, et.al., Nature Materials (2022).
- 2) Rectified random cell motility as a mechanism for embryo elongation. I. Regev\*, K. Guevorkian\*, A. Gupta\*, O. Pourqui, and L. Mahadevan. (\* Equal contribution.) Development, 149(6), 199423 (2022).
- 3) Flocking of Active Particles in a Turbulent Flow. A. Gupta, A. Roy, Arnab Saha, and S. S. Ray. Phys. Rev. F (Rapid), 5, 052601 (2020).

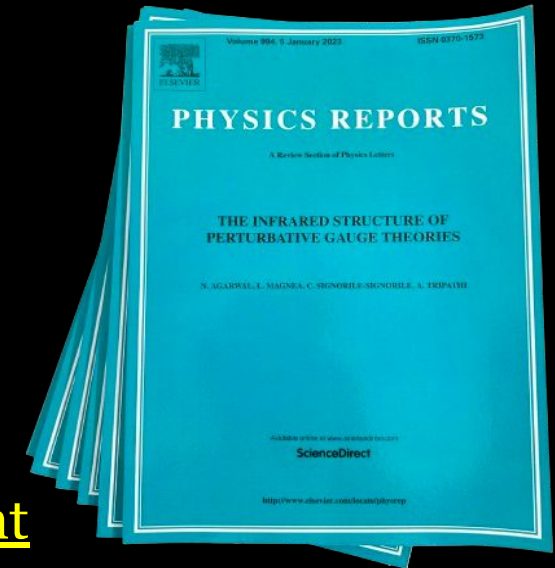




## Major Areas of Research/Up to 3 major sponsored projects

Theoretical High Energy Physics  
Perturbative Quantum  
Chromodynamics Infrared structure of  
Gauge Theories

## Major Research Facilities in the Group



## Technology/Product Developed/Up to 3 most significant Publications

N. Agarwal, S. Pal, A. Srivastav and A. Tripathi, Deciphering colour building blocks of massive multiparton amplitudes at 4-loops and beyond, JHEP 02 (2023) 258 [2212.06610]

N. Agarwal, S. Pal, A. Srivastav and A. Tripathi, Building blocks of Cwebs in multi-parton scattering amplitudes, JHEP 06 (2022) JHEP 06 (2022) 020 [2204.05936]



**Arabinda Halder**

**Associate Professor, Magnonics and**

**Microwave Magnetics Laboratory, Department of Physics**

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**Major Areas of Research/Up to 3 major sponsored projects**

Magnetic thin films, Nanomagnetism, Spintronics, Magnonics, Microwave magnetics, Nanofabrication

**Major Research Facilities in the Group**

Ferromagnetic resonance, Magnetoresistance, Inverse spin Hall effect, Brillouin light scattering



**Technology/Product Developed/Up to 3 most significant Publications**

**A. Halder\***, “ *Functional nanostructures for bias-magnet-free and reconfigurable microwave magnetic devices*”, Materials Today Electronics 2, 100008 (2022). **(Review article)**

**A. Halder\*** and A. O. Adeyeye, “ *Functional Magnetic Waveguides for Magnonics*”, Appl. Phys. Lett. 119, 060501 (2021). **(Perspective article)**

**B. Paikaray, M. Kuchibhotla, C. Murapaka and A. Halder\***, “ *Skyrmion dynamics in concentric and eccentric nano-ring structures*”, IEEE Trans. Magn. 58, 4300406 (2021).



# Archak Purkayastha

Assistant Professor, Department of Physics

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## Major Areas of Research

Quantum Statistical Physics, Quantum transport  
Quantum thermodynamics

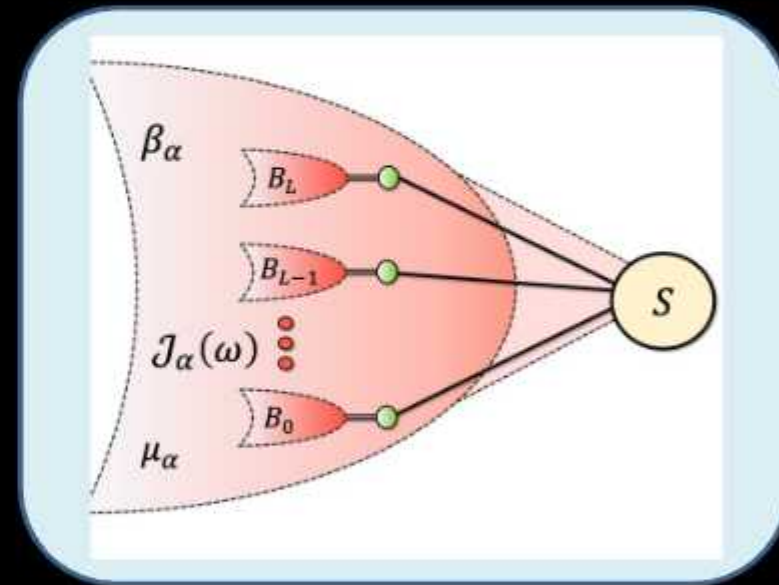
## Major Research Facilities in the Group

Tensor network and sparse matrix techniques, Quantum master equation, Quantum Langevin equation

## Technology/Product Developed

Numerical and analytical techniques for quantum technology.

1. Periodically refreshed baths to simulate open quantum many-body dynamics, Archak Purkayastha, Giacomo Guarnieri, Steve Campbell, Javier Prior, John Goold, Phys. Rev. B 104, 045417 (2021).



**Atanu Rajak**

**Assistant Professor**

**Lab: Non-equilibrium many-body physics**

**Department of Physics**

Office: C-Block, 208F ; Institute Email: [atanu@phy.iith.ac.in](mailto:atanu@phy.iith.ac.in);

Google scholar: <https://scholar.google.co.in/citations?user=RJhUov4AAAAJ&hl=en>



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Indian Institute of Technology Hyderabad



## Major Areas of Research/Up to 3 major sponsored projects

Thermalization and quantum chaos in driven interacting many-body systems

Disordered systems, quantum annealing and com

Topological phases in static or driven systems

## Major Research Facilities in the Group

Departmental cluster

Powerful workstation with 128 GB RAM and 32 cores

Analytical and numerical expertise in statistical and

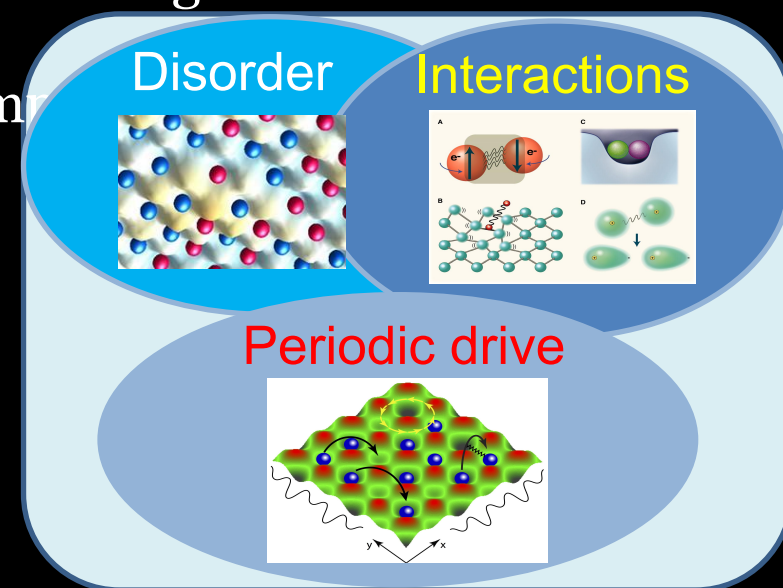
condensed matter systems

## Technology/Product Developed/Up to 3 most significant Publications

A. Rajak, S. Suzuki, A. Dutta, and B. K. Chakrabarti, Quantum annealing: An overview, *Philos. Trans. R. Soc. A* 381, 20210417 (2023)

A. Rajak, I. Dana, and E. G. Dalla Torre, Characterizations of prethermal states in periodically driven many-body systems with unbounded chaotic diffusion, *Phys. Rev. B* 100, 100302(R) (2019)

A. Rajak and A. Dutta, Survival probability of an edge Majorana in a one-dimensional p-wave superconducting chain under sudden quenching of parameters *Phys. Rev. E* 89, 042125 (2014)





# Bhuvanesh Ramakrishna

Associate Professor, High energy Laser, Department of Physics

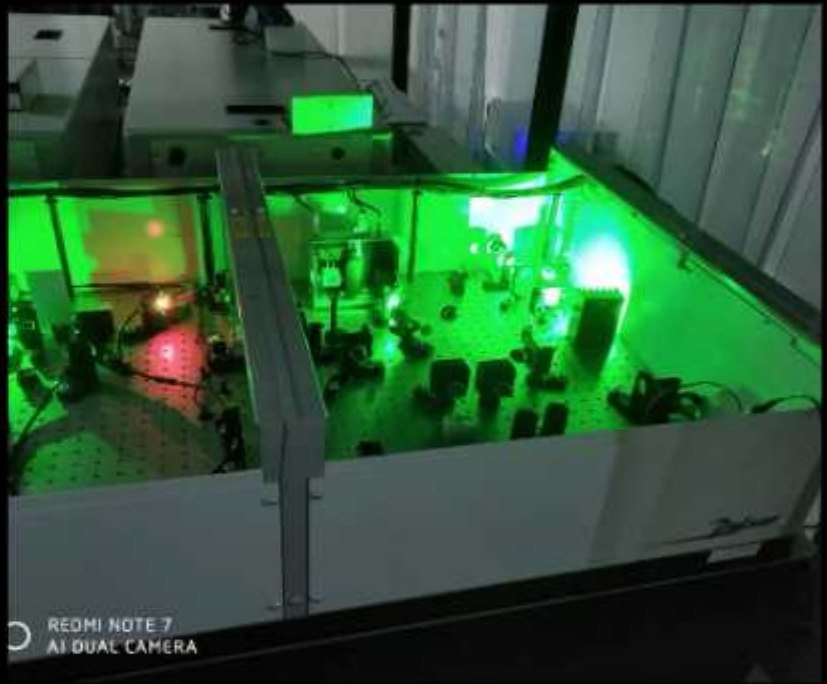
B318.; 6712.; 8106847958 (optional); bhuvan@phy.iith.ac.in; <https://bhuvaneshr.wordpress.com/>

## Major Areas of Research/Up to 3 major sponsored projects

- # Laser plasma interaction
- # Proton beam therapy.
- # Plasma astrophysics

## Major Research Facilities in the Group

- # Terawatt femtosecond Laser
- # Ion spectrometer.
- # Imaging camera



## Technology/Product Developed/Up to 3 most significant Publications

# Photon emission enhancement studies from the interaction of ultraintense laser pulses with shaped targets. *Physical Review E*, **Volume 105**, **Year 2022**

# Ion source perturbation and control in intense laser plasma interaction **Matter and Radiation at Extremes**, **Volume 5**, **Year 2020**



# Chetankumar Adappa Jalihal

Asst. Professor, Climate Evolution & Dynamics Group, Climate Change

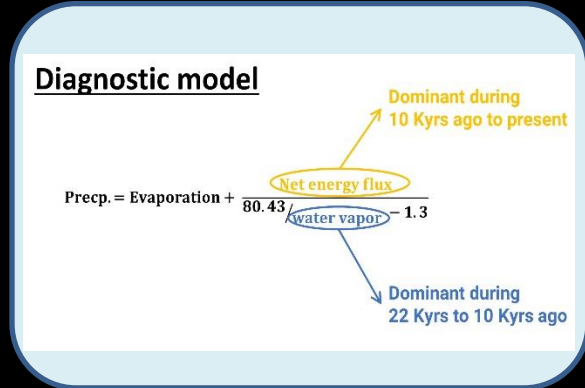
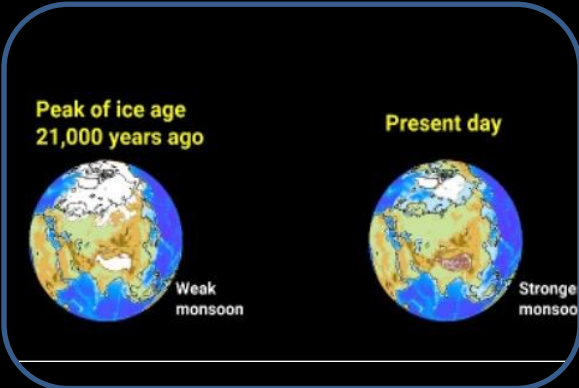
Phone No.; 8762730391, chetankumar.jalihal@cc.iith.ac.in; Webpage Link

## Major Areas of Research

Monsoon Dynamics, Paleoclimates, Climate modelling, Climate variability, Feedbacks and Interactions in Climate system

## Major Research Facilities in the Group

## Technology/Product Developed





# Jyoti Ranjan Mohanty

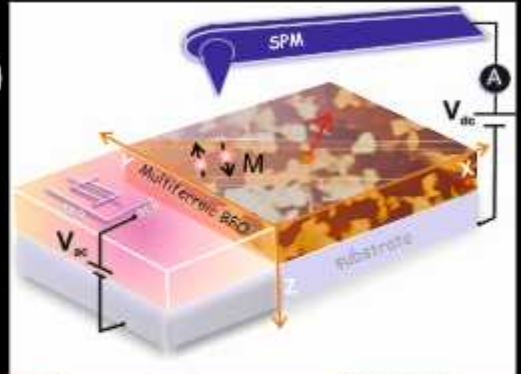
Associate Professor, Nanomagnetism and Microscopy lab,

Department of Physics

B-216.; Office Phone No.040-; 23016709; [jmohanty@phy.iith.ac.in](mailto:jmohanty@phy.iith.ac.in) ; [NML IITH](http://NML IITH)

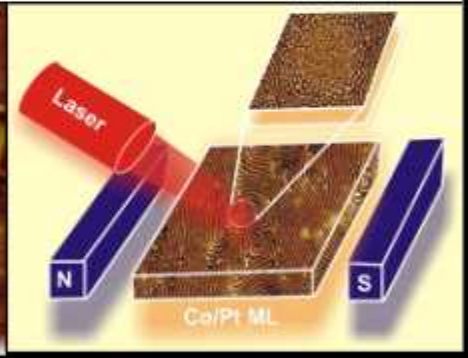
## Major Areas of Research/Up to 3 major sponsored projects

- Magnetic spin texture for data storage application (DST- Nanomission)
- Advanced magnetic material for field sensing (DRDO-NRB)
- Anisotropy engineered magnetic material for application (SERB)
- Magnetic microscopy of functional material and devices
- Length and time dynamics in magnetic system



## Major Research Facilities in the Group

- DC/RF sputtering system, CVD system
- Multi-chamber thin film deposition system (upcoming)
- Scanning Probe Microscopy (AFM/MFM/PFM)
- Magneto-optic Kerr magnetometer and microscope
- 3D optical profilometer
- Projection lithography with probe station



## Technology/Product Developed/Up to 3 most significant Publications

- Tunable magnetic thin film system for field sensing
- Comprehensive one-stop magnetic microscopy and modeling facility
- Dynamics and inertia of skyrmionics spin texture, Nature Physics, 11(3), 225, 2015
- Dichroic coherent diffractive imaging, PNAS, 108 (33), 13393, 2011

Understanding magnetic microstructure through experiment and machine learning, ACS Applied Materials and Interfaces, 14 (44), 50318, 2022



# V. Kanchana

Professor, Materials design and Simulation lab, Department of Physics

Office: A-105; Office No.:(040) 2301 - 6702.; kanchana@phy.iith.ac.in, Web Link: <https://people.iith.ac.in/kanchana/>

## Major Areas of Research/Up to 3 major sponsored projects

### Research areas:

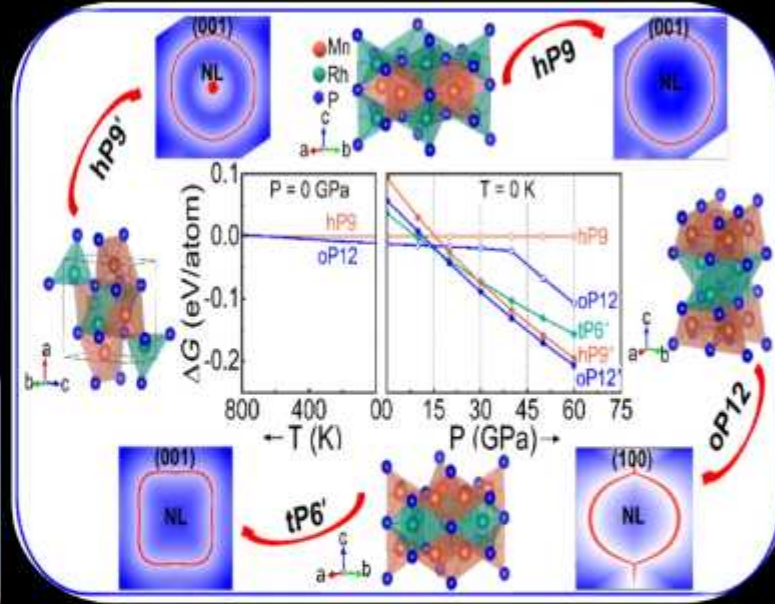
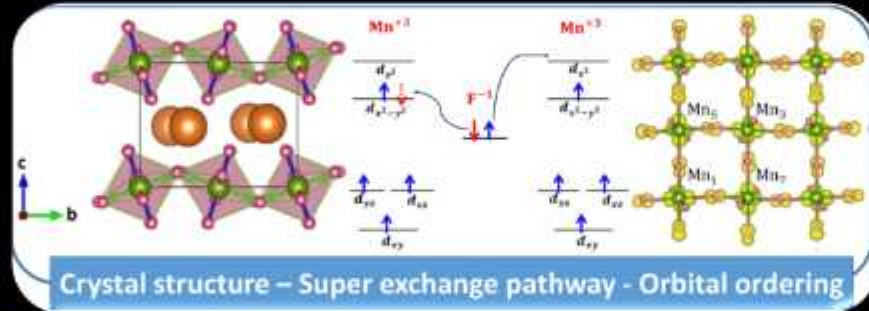
1. Topological materials
2. Advanced magnetic materials
3. Energy harvesting materials

### Sponsored projects:

1. DRDO; PI; (29.92 lakhs)
2. BRNS; PI; (27.09 lakhs)
3. CSIR ; PI; (24.15 lakhs)

## Major Research Facilities in the Group

Workstations and Common facilities



## Technology/Product Developed/Up to 3 most significant Publications

1. Orbital ordering and quasi-two-dimensional magnetism in  $AMnF_4$  ( $A=K,Rb$ ): A first-principles study, Anuroopa Behatha, Tulika Maitra, Alexander N. Rudenko, , and **V. Kanchana**, Phys. Rev. B **106**, 024409 (2022)
2. Topological phonons and electronic structure of  $Li_2BaSi$  class of semimetals, Vineet Kumar Sharma, Birender Singh, Anan Bari Sarkar, Mayanak K Gupta, Ranjan Mittal, Amit Agarwal, Bahadur Singh, **V Kanchana**, Journal of Physics: Condensed Matter **34** (12), 12550 (2021)
3. Electronic structure and physical properties of EuAuAs single crystal, S Malick, J Singh, A Laha, **V Kanchana**, Z Hossain, D Kaczorowski, Physical Review B **105** (4), 045103 (2021)



# Kirit Makwana

Assistant Professor, pLASma Lab, Department of Physics

C-435.; +91 40 2301 6721; kdmakwana@phy.iith.ac.in; <https://people.iith.ac.in/kdmakwana/>

## Major Areas of Research/Up to 3 major sponsored projects

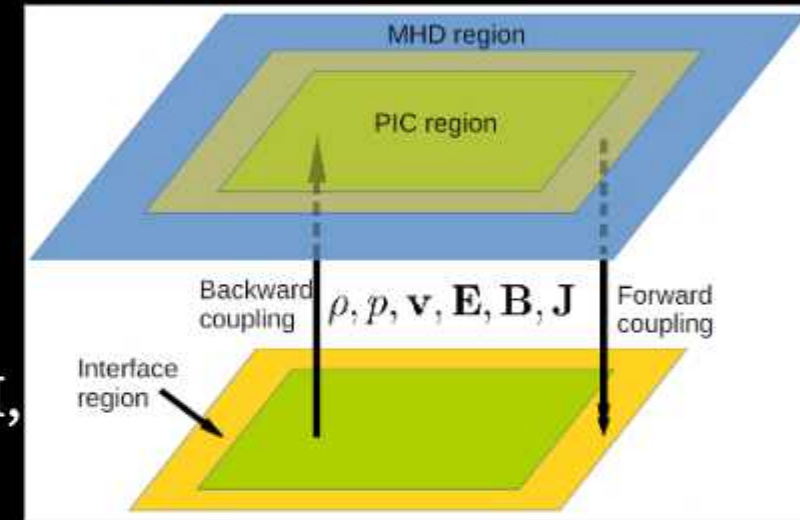
- Theoretical and computational analysis of space, astrophysical, and laboratory plasmas
- SERB-SRG project – Kinetic scale current sheets and wave interactions in space plasma turbulence

## Major Research Facilities in the Group

- Two workstations with net 56 cores, 256 GB RAM, 30TB storage space
- Shared computing cluster, using National Supercomputing Mission (NSM) facility, and NSM research grant

## Technology/Product Developed/Up to 3 most significant Publications

- Properties of magnetohydrodynamic modes in compressively driven plasma turbulence, K. D. Makwana, and Huirong Yan, Physical Review X 10, Vol. 3, 031021 (2020)
- Study of magnetic reconnection in large-scale magnetic island coalescence via spatially coupled MHD and PIC simulations (Editor's Pick) K. D. Makwana, R. Keppens, and G. Lapenta, Phys. Plasmas 25, 082904 (2018)



# Mahesh Peddigari

Assistant Professor, Functional Ceramics and Device Lab, Department of Physics

C-208/F; Office Phone No. 040-23016726; mahesh.p@phy.iith.ac.in; [Maheshpeddigari](mailto:mahesh.p@phy.iith.ac.in)

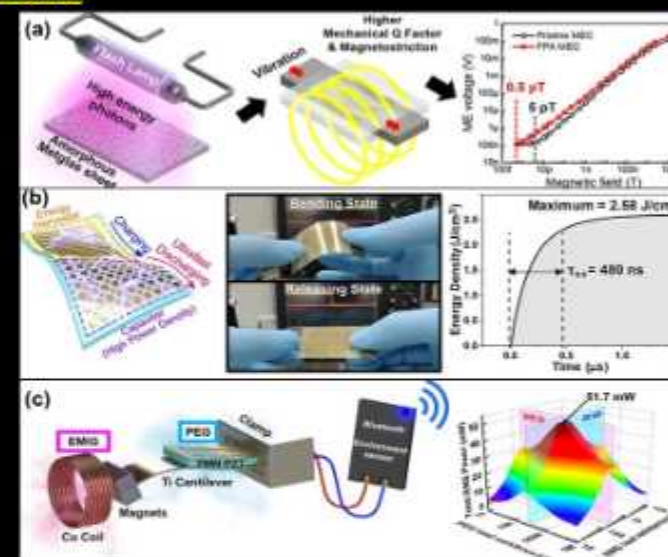


## Major Areas of Research/Up to 3 major sponsored projects

1. Multifunctional ferro/piezoelectrics
2. Energy storage and electrocaloric materials
3. Flexible energy harvesters and sensors
4. Artificial relaxor ferroelectrics

## Major Research Facilities in the Group

Will be updated soon



## Technology/Product Developed/Up to 3 most significant Publications

1. Ultra-magnetic field sensitive magnetoelectric composite with sub-pT detection limit at low frequency enabled by flash photon annealing, *Nano Energy*, 90, 106598, 2021.
2. Flexible Self-charging, Ultrafast, High-power density Ceramic Capacitor System, *ACS Energy Letters*, 6, 1383-1391, 2021.
3. A high output magneto-mechano-triboelectric generator enabled by accelerated water-soluble nano-bullets for powering a wireless indoor positioning system, *Energy & Environmental Science*, 12, 666-674, 2019.



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# Manish Kumar Niranjana

Professor, Department of Physics

C-516; 040-23016705; manish@phy.iith.ac.in; <https://iith.ac.in/phy/manish/>

## Major Areas of Research

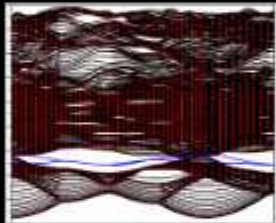
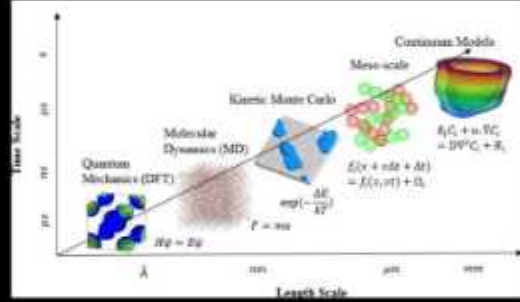
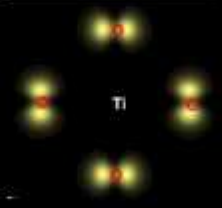
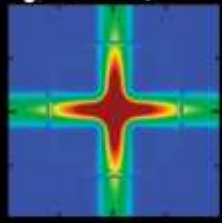
Theoretical Nanoscale Physics; Ab-initio electronic structure;  
Heterostructures; Surface and Interface Physics;  
Quantum transport

## Major Research Facilities in the Dept.

High performance cluster and workstations

## 3 most significant Publications

- 1) M. K. Niranjana, Physical Review B, 103 (19), 195437 (2021)
- 2) M. K. Niranjana et al., Applied Physics Letters, 96, 222504 (2010)
- 3) M. K. Niranjana et al., Physical Review Letters 103, 016804 (2009)





**Mayukh Pahari**

**Assistant Professor, Astrophysics Lab, Department of Physics**

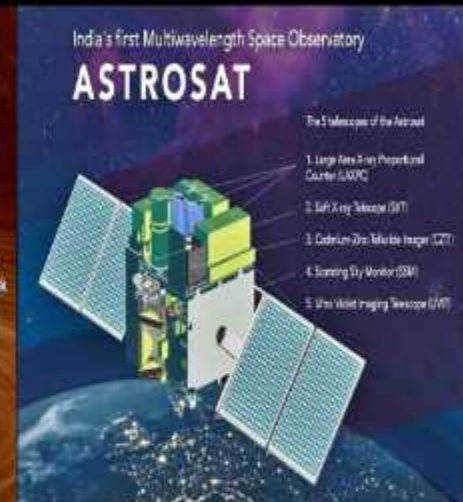
C546.; 04023016722.; 8207039096; mayukh@phy.iith.ac.in; <https://iith.ac.in/phy/mayukh/>

**Major Areas of Research/Up to 3 major sponsored projects**

**Black hole Astrophysics**  
**High resolution spectro-timing techniques in Astronomy and Astrophysics**  
**X-ray and Gamma-ray photon detectors**

**Major Research Facilities in the Group**

**High end computation facilities**  
**Telescopes**  
**Access to Major space satellites around the world like AstroSat, Chandra, XMM-Newton**



**Technology/Product Developed/Up to 3 most significant Publications**

**‘A persistent ultraviolet outflow from an accreting neutron star binary transient’: 2022, Nature, Volume 603, Issue 7899, p.52-57**  
**‘X-Ray Spectral State Evolution in IGR J17091-3624 and Comparison of its Heartbeat Oscillation Properties with those of GRS 1915+105’: 2014, The Astrophysical Journal, Volume 783, Issue 2, article id. 141, 21 pp.**  
**‘Large area high temperature hard X-ray spectroscopy detectors for space experiments’: 2010, Nuclear Instruments and Methods in Physics Research Section A, Volume 621, Issue 1-3, p. 364-370.**



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# Narendra Sahu

Professor, High Energy Physics, Department of Physics

C-402; Office Phone No: 04023016706; Mob: 9494425086; Email: nsahu@phy.iith.ac.in; [Narendra Sahu](#)

## Major Areas of Research/Up to 3 major sponsored projects

Astroparticle physics (neutrino and dark matter)

(1) Asymmetric dark matter (DST fast track project)

(2) Unified theory of DM, neutrino mass and

Baryon asymmetry (DAE-BRNS project)

## Major Research Facilities in the Group

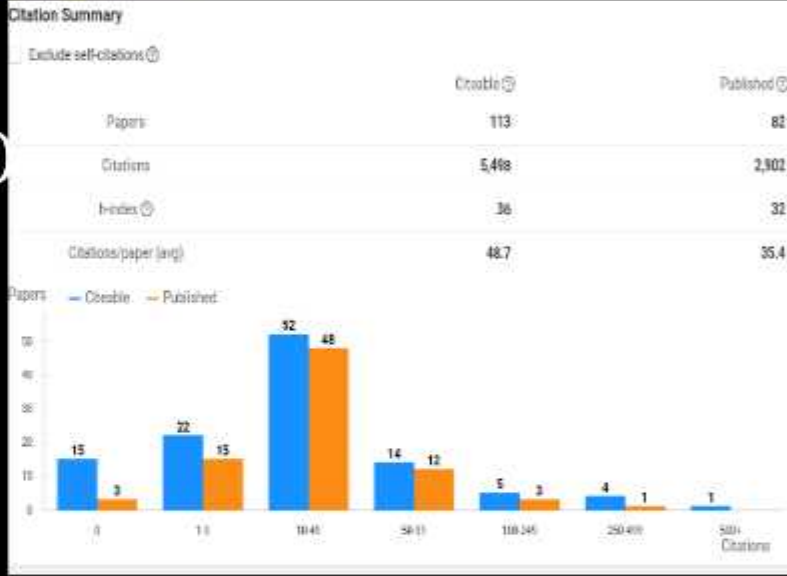
Theoretical Physics

## Technology/Product Developed/Up to 3 most significant Publications

(1) Asymmetric inelastic inert doublet dark matter from triplet scalar leptogenesis by C. Arina and N. Sahu, Nucl. Phys. B854 (2012), 666-699

(2) Co-genesis of matter and dark matter with vector-like fourth generation leptons by C. Arina, R.N. Mohapatra and N. Sahu, Phys.

Lett. B720 (2013), 130-136



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# Nithyanandan Kanagaraj

Assistant Professor, Ultrafast Complex Photonics Lab, Department of Physics

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## Major Areas of Research/Up to 3 major sponsored projects

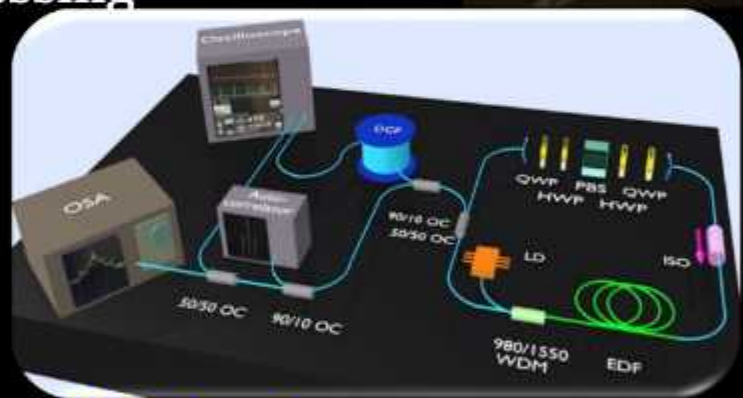
High Power Lasers for Medical, Manufacturing, and Directed Energy Weapons

Smart Photonics systems: AI-assisted Lasers, Sensors, Frequency Comb  
Fiber Optics Communication and Optical Signal Processing  
Machine Learning and advanced computation



## Major Research Facilities in the Group

Near IR Fiber Lasers and amplifiers operating  
Laser-based material processing systems  
Advanced Laser Characterization facility



## Technology/Product Developed/Up to 3 most significant Publications

Spotlighting the Simultaneous Formation of Dissipative Solitons in an Er-Doped Bidirectional Ultrafast Fiber Laser, Phys. Rev. Applied 18, 064096, 2022

Real-time observation of internal motion within ultrafast dissipative optical soliton molecules, Physical Review Letters, 18 (24), 243901, 2017

Optical Soliton molecular complexes in a passively mode-locked fibre laser. Nature communications 10 (1), 1-11, 2019



# Prem Pal

Professor, MEMS and Micro/Nanosystems Laboratory, Department of Physics

Office Room No. A410; Office Phone No.: 040-2301-6704; Institute Email: prem@phy.iith.ac.in

Webpage Link: <http://www.iith.ac.in/~memslab/>



## Major Areas of Research/Up to 3 major sponsored projects

Silicon wet bulk micromachining, Thin films for MEMS, Silicon surface texturing for MEMS and solar cell applications, Glass wet bulk micromachining

## Major Research Facilities in the Group

RF & DC Magnetron Sputtering system, Mask Aligner, Spectroscopic Ellipsometry, 3D Laser Scanning microscope, Reactive Ion Etching System,



RF & DC Magnetron Sputtering system



Mask Aligner

## Technology/Product Developed/Up to 3 most significant Publications

- Prem Pal, V. Swarnalatha, A. V. Narasimha Rao, A. K. Pandey, H. Tanaka, and K. Sato, "High Speed Silicon Wet Anisotropic Etching for Applications in Bulk Micromachining: A Review", *Micro and Nano Systems Letters*, vol. 9, no.4, pp. 1-59, Feb. 2021.
- Prem Pal and K. Sato, "A comprehensive review on convex and concave corners in silicon bulk micromachining based on anisotropic wet chemical etching", *Micro and Nano Systems Letters*, vol. 3, no.1, pp. 1-42, May 2015.
- A. Ashok and Prem Pal, "Investigation of anodic silicon dioxide thin films for MEMS applications", *Micro & Nano Letters*, vol. 9, no. 12, pp. 830-834, Dec. 2014.



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भारतीय प्रौद्योगिकी संस्थान हैदराबाद  
Indian Institute of Technology Hyderabad

# Priyotosh Bandyopadhyay

Associate Professor, Department of Physics (Electroweak Group)

Acad B-506, Phone: +91 040 2301 6716, Email: [bpriyo@phy.iith.ac.in](mailto:bpriyo@phy.iith.ac.in), Webpage: [people.iith.ac.in/bpriyo/](http://people.iith.ac.in/bpriyo/)



## Major Areas of Research/Up to 3 major sponsored projects

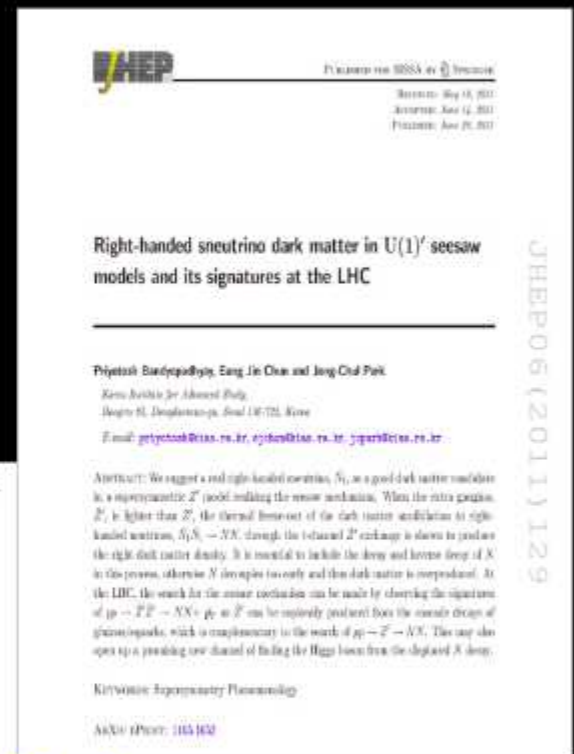
- Physics Beyond the Standard Model (BSM)
- Finite temperature field theory, order of phase transition, gravitational wave
- Collider physics
- Neutrino physics and dark matter
- SERB Sponsored projects: CRG, MATRICS, Karyashala

## Major Research Facilities in the Group

- 5 high-performance workstations sponsored by SERB and RDF.

## Technology/Product Developed/Up to 3 most significant Publications

- P. Bandyopadhyay and A. Costantini. *Obscure Higgs bosons at colliders*. Phys.Rev.D 103 (2021) 1, 015025
- P. Bandyopadhyay and R. Mandal. *Revisiting Scalar Leptoquark at the LHC*. Eur.Phys.J.C 78 (2018) 491
- P. Bandyopadhyay, E.J. Chun, and J.C. Park. *Right-handed sneutrino dark matter in  $U(1)'$  seesaw models and its signatures at the LHC*. JHEP 06 (2011) 129



# Sai Santosh Kumar Raavi

Associate Professor, Department of Physics & Department of Climate Change

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webpage link. <https://sites.google.com/iith.ac.in/sskraavi>

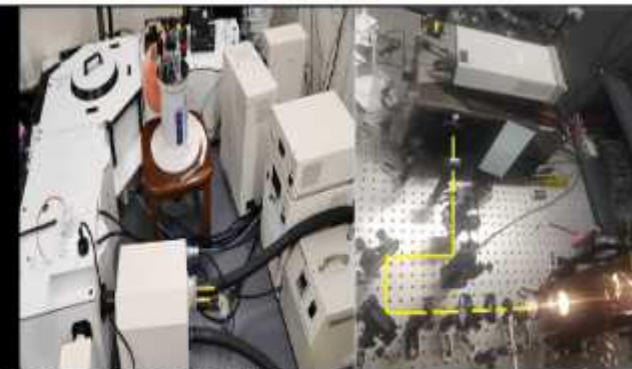


## Major Areas of Research/Up to 3 major sponsored projects

- Optical time-resolved spectroscopy
- Ultrafast nonlinear optics
- Device Physics of Organic Photovoltaics (OPV)

## Major Research Facilities in the Group

- Steady-state and Time-resolved Photoluminescence spectroscopy with time-correlated single photon counting (TCSPC) detection.
- Thin-film preparation with spin-coating technique and vacuum deposition technique
- Fabrication of simple thin-films devices like organic photovoltaic cell, for spectroscopic characterization
- Characterization of solid-state dye-sensitized solar cells, organic bulk-heterojunction solar cells with Solar simulator and external quantum efficiency (EQE) measurement



## Technology/Product Developed/Up to 3 most significant Publications

- Katta, Venkata Seshaiyah, et al. "Plasmonic Au NPs embedded Ytterbium-doped TiO<sub>2</sub> nanocomposites photoanodes for efficient indoor photovoltaic devices." *Applied Surface Science* 611 (2023): 155728.
- Biswas, Chinmoy, et al. "Multistep Electron Injection Dynamics and Optical Nonlinearity Investigations of  $\pi$ -Extended Thioalkyl-Substituted Tetrathiafulvalene Sensitizers." *The Journal of Physical Chemistry C* 124.44 (2020): 24039-24051.
- Ahmed, Md Soif, et al. "Metalated porphyrin-naphthalimide based donor-acceptor systems with long-lived triplet states and effective three-photon absorption." *Journal of Photochemistry and Photobiology A: Chemistry* 435 (2023): 114324.

**Saket Asthana**

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**Major Areas of Research/Up to 3 major sponsored projects**

Relaxor materials for energy storage density.

Electric field driven effects on structure-property.

Ferroic and Multiferroic Materials.



**Major Research Facilities in the Group**

Fumehood, Ball Mill, XRD, SEM



**Technology/Product Developed/Up to 3 most significant Publications**

<https://scholar.google.co.in/citations?user=9GPKaOwAAAAJ&hl=en>

<https://www.scopus.com/authid/detail.uri?authorId=7006820783>

<https://orcid.org/0000-0002-6420-3304>



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भारतीय प्रौद्योगिकी संस्थान हैदराबाद  
Indian Institute of Technology Hyderabad

Dr. Saranya Samik Ghosh



Assistant Professor, High Energy Physics, Physics

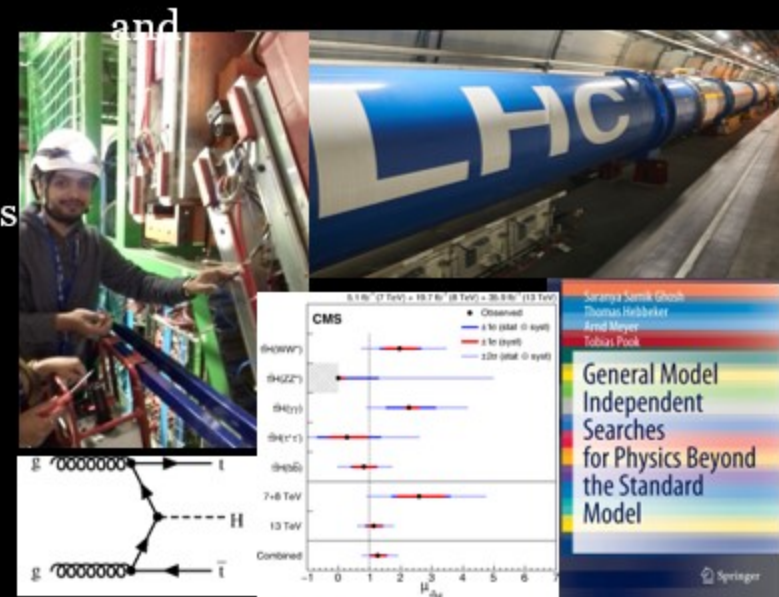
Office:PH312; Mobile: +91 9867077699; Email: [saranya.ghosh@phy.iith.ac.in](mailto:saranya.ghosh@phy.iith.ac.in) ; [Webpage](#)

## Major Areas of Research

- Research on fundamental particles and their interactions in the field of experimental High Energy Physics (HEP), specifically at the Large Hadron Collider (LHC)
- Physics of the Higgs boson, Standard Model (SM) measurements and searching for new physics phenomena beyond the SM
- Research and development of particle physics detectors
- Development of computing algorithms, machine learning techniques for application in High Energy Physics research

## Major Research Facilities in the Group

- Particle detector laboratory under development



## Technology/Product Developed/Up to 3 most significant Publications

- CMS Collaboration, “Observation of ttH Production” , Phys. Rev. Lett. 120, 231801 (2018)
- CMS Collaboration, “MUSiC: a model-unspecific search for new physics in proton-proton collisions at  $\sqrt{s} = 13$  TeV” , Eur. Phys. J. C (2021) 81: 629
- CMS Collaboration, “Measurements of Higgs boson properties in the diphoton decay channel in proton-proton collisions at  $\sqrt{s} = 13$  TeV” , J. High Energ. Phys. (2018) 2018: 185

# Shinde Satish Laxman

Assistant Professor, Nanophotonic Material Group, Department of Physics

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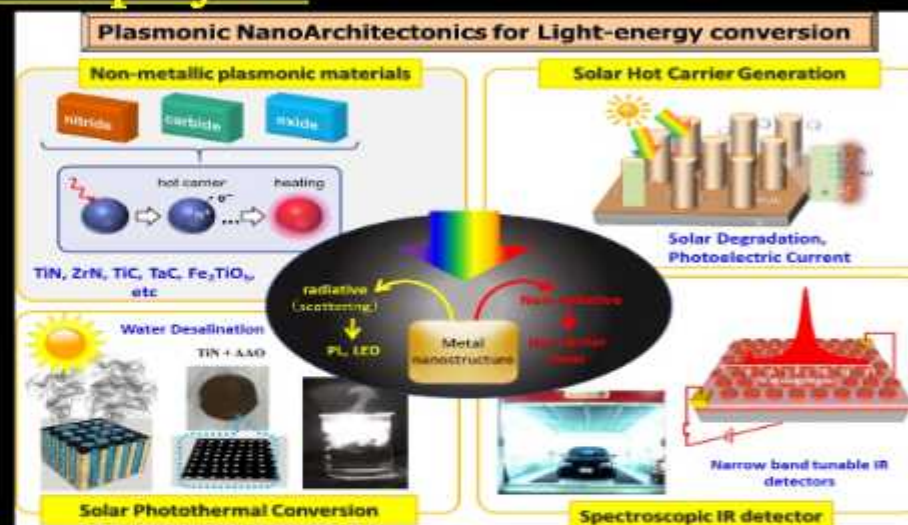


## Major Areas of Research/Up to 3 major sponsored projects

1. Nanophotonics, Metamaterials
2. Energy materials
3. Photothermal energy harvesting and Photocatalysis

## Major Research Facilities in the Group

Will be updated soon...



## Technology/Product Developed/Up to 3 most significant Publications

1. T. Goto, S. Ito, S. L. Shinde, R. Ishibiki, Y. Hikita, I. Matsuda, I. Hamada, H. Hosono and T. Kondo, Carbon dioxide adsorption and conversion to methane and ethane on hydrogen boride sheets, Communications Chemistry, 1-10, 2022.

2. S. L. Shinde, H. D. Ngo, S. Ishii, and T. Nagao., Solar-active Titanium-based Oxide Photocatalysts Loaded on TiN Array Absorbers for Enhanced Broadband Photocurrent Generation. Journal of Applied Physics, 023103, 2020.

3. S. L. Shinde, S. Ishii, and T. Nagao, Sub-bandgap photo-detection from titanium nitride/germanium heterostructure ACS Applied Materials & Interfaces, 21965-21972, 2019.



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# Saurabh Sandilya

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## Major Areas of Research

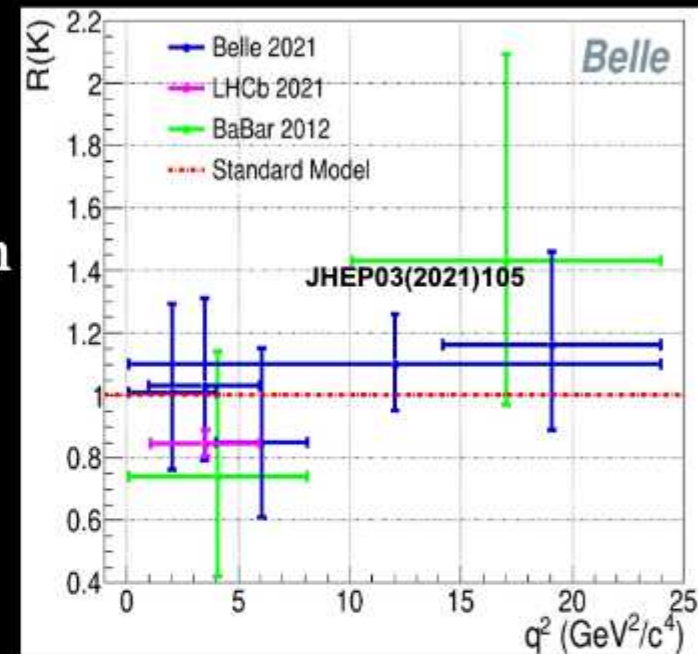
- Flavour Physics, Rare B-meson Decays
- Belle (II) Experiment
- High Energy Physics Detector and Instrumentation
- Medical Physics

## Major Research Facilities in the Group

- Cosmic Muon Detection Setup

## Up to 3 most significant Publications

1. “Test of lepton flavor universality and search for lepton flavor violation in  $B \rightarrow K\ell\ell$  decays” (Belle Collab.) JHEP03(2021)105.
2. “Measurement of the  $B^+ / B^0$  production ratio in  $e^+e^-$  collisions at the  $Y(4S)$  resonance using  $B \rightarrow J/\psi(\ell\ell)K$  decays at Belle” (Belle Collab.), arXiv:2207.01194 accepted in PRD(L)
3. “Charged particle identification performance of the TOP counters in Belle II” (Belle II TOP sub-detector group), J. Phys.: Conf. Ser. 2374 012107



# Shantanu Desai

Associate Professor, Department of Physics and AI

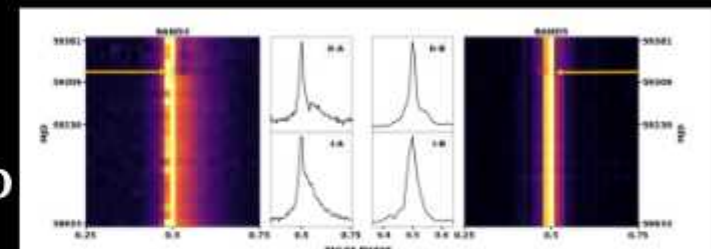
C-414; Office Phone No.; Mobile 9619127162; Email: shantanud@phy.iith.ac.in; Webpage Link

[people.iith.ac.in/shantanud](http://people.iith.ac.in/shantanud)



## Major Areas of Research/Up to 3 major sponsored projects

- Cosmology and Galaxy Clusters
- Pulsar Timing and Search for nanoHz Gravitational Waves
- Applications of Machine learning and Data mining to Astrophysics



## Major Research Facilities in the Group

National and international telescopes eg.

- Giant Meterwave Radio Telescope
- Dark Energy Camera
- South Pole Telescope
- IceCube neutrino observatory



## Technology/Product Developed/Up to 3 most significant Publications

- S. Desai et al, ``Search for Dark Matter WIMPs using Upward Through-Going Muons in Super-Kamiokande'', Phys. Rev. D70, 083523 (2004)
- Y. Ashie et al [includes S. Desai] ``A Measurement of Atmospheric neutrino Oscillation Parameters by Super-Kamiokande'' Phys. Rev. D71, 112005 (2005)
- B. Abbott et al [includes S. Desai] ``Multi-messenger observation of a Binary Neutron Star Merger'' ApJL, 848. L17 (2017)



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# Shubho Ranjan Roy

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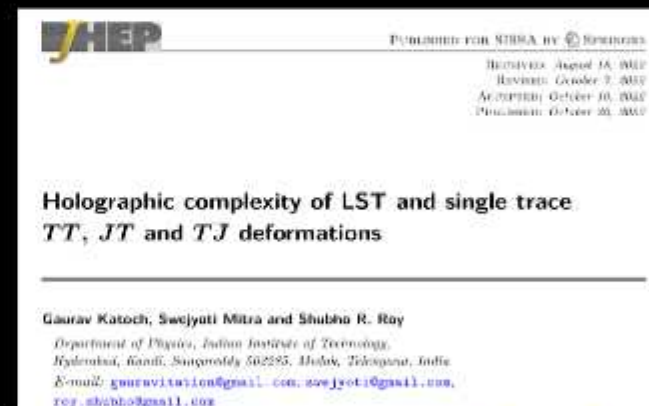
Webpage: <https://people.iith.ac.in/sroy/>



## Major Areas of Research

1. Nonperturbative string/M-theory and field theory (AdS/CFT, (M)atrix Theory)
2. Quantum Information approaches to Quantum Gravity
3. Quantum Black Holes & Quantum Cosmology
4. Holography beyond asymptotically AdS spacetimes

## Major Research Facilities in the Group



## Technology/Product Developed/Up to 3 most significant Publications

1. Holographic representation of bulk fields with spin in AdS/CFT, *Phys.Rev.D* 86 (2012) 026004 (with D.N. Kabat, G. Lifschytz, D. Sarkar)
2. Fluids, Anomalies and Chiral Magnetic effect: A Group-Theoretic formulation, *Phys.Rev.D* 86 (2012) 025012 (with V.P. Nair, R. Ray)
3. A Grassmann path from AdS<sub>3</sub> to flat space, *JHEP* 03 (2014) 036 (with C. Krishnan, A. Raju)



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# Raghavendra Srikanth Hundi

## Associate Professor, HEP, Department of Physics



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[Webpage Link](#)

Major Areas of Research/Up to 3 major sponsored projects:

Particle physics phenomenology,  
Beyond standard model,  
Neutrino masses.

Major Research Facilities in the Group:  
Theoretical research

PHYSICAL REVIEW D 108, 015006 (2023)

Study on the global minimum and  $H \rightarrow \gamma\gamma$  in the Dirac scotogenic model

Raghavendra Srikanth Hundi\*

*Department of Physics, Indian Institute of Technology Hyderabad, Kandi - 502 284, India*

 (Received 10 March 2023; accepted 18 June 2023; published 6 July 2023)

Technology/Product Developed/Up to 3 most significant Publications:

R.S. Hundi, Lepton flavor violating Z and Higgs decays in the scotogenic model,  
Eur. Phys. J. C 82, no.6, 505 (2022).

J. Ganguly and R. S. Hundi, Neutrino Mixing by modifying the Yukawa coupling  
structure of constrained sequential dominance, Phys. Rev. D 103, no.3, 035007  
(2021).

R. S. Hundi and I. Sethi, Neutrino masses and mixing angles in a model with six  
Higgs triplets and A 4 symmetry, Phys. Rev. D 102, no.5, 055007 (2020)



# Suryanarayana Jammalamadaka

Associate Professor, MMDP Lab, Department of Physics

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## Major Areas of Research/Up to 3 major sponsored projects

1. Magnetic materials, Device physics, Spintronics, Data storage and Non volatile memory devices
2. Electric field control of exchange bias in FM/AFM multilayers for energy efficient spintronic applications (DST SERB CRG)



## Major Research Facilities in the Group

1. Vibrating sample magnetometer
2. RF Magnetron sputtering/Thermal evaporator
3. Closed cycle helium cryostat (10 – 450 K)
4. Semiconductor characterization system (Keithely 4200)

## Technology/Product Developed/Up to 3 most significant Publications

1. A.K. Jana, S. Jammalamadaka, "Spin transfer torque Bias (STTB) due to domain wall resistance in an infinitely long ferromagnetic nanowire." *IOP-Nanotechnology*. 1361-6528, (2022)
2. Dwipak Prasad Sahu, Prabana Jetty and Suryanarayana Jammalamadaka, Graphene oxide based synaptic memristor device for neuromorphic computing, *Nanotechnology* **32** 155701 (2021)
3. Dwipak Prasad Sahu & S. Narayana Jammalamadaka Detection of bovine serum albumin using hybrid TiO<sub>2</sub> + graphene oxide based Bio – resistive random access memory device *Scientific Reports* **9**, 16141 (2019)

**Patents:** 1. S. Narayana Jammalamadaka and Dwipak Prasad Sahu Application No: 201941034084; Filing Date: August 23, 2019 (published by Indian Patent Office in the Official Journal No. 09/2021).

2. S. Narayana Jammalamadaka, M. D. Sreeveni and Chandrasekhar Murapaka Patent entitled Application No: 201941048936; Filing Date: 28th November 2019. Published at Indian patent official journal

# Vandana Sharma

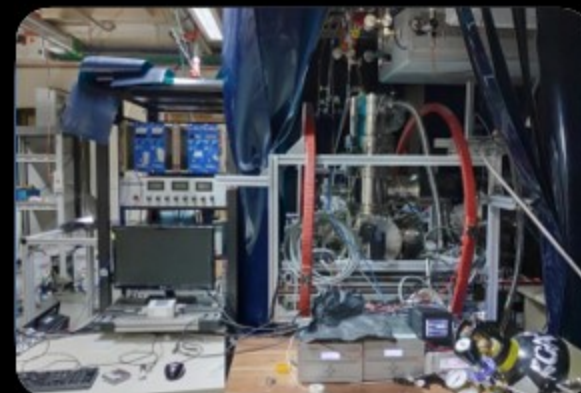
Professor, A few-body Quantum Dynamics Lab, Physics Department

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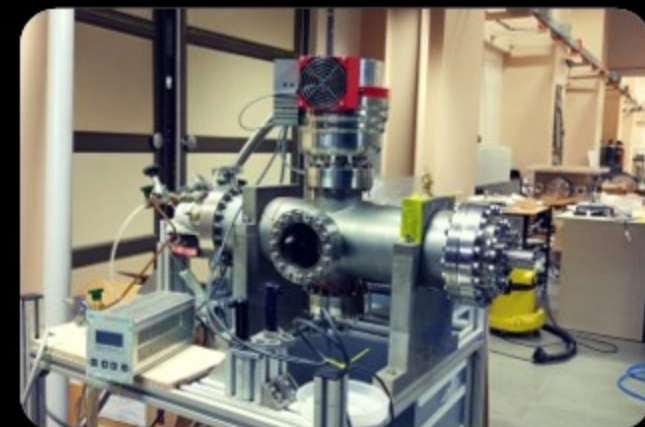
## Major Areas of Research

- Ultrashort electron generation
- Mass Spectrometry
- Ultrafast atomic and molecular dynamics
- Nano-/Micro-particle beam Generation
- Phase dependent study using CEO phasemeter



## Major Research Facilities in the Group

- 1kHz, 6mJ Femtosecond Laser
- Reaction Microscope Spectrometer (REMI)
- Velocity Map Imaging Spectrometer (VMI)
- Nano-Tip Femtosecond Electron Spectrometer
- Stereo – ATI CEO Phasemeter



## Technology/Product Developed

- 3D IR Vein Viewer
- Reflectron Mass Spectrometer
- Computer Vision aided Nano Tip Etching
- Aerosol Generator and Aerodynamic Lens



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# Yogesh Kumar Srivastava

Assistant Professor, Ultrafast THz Photonics Lab, Department of Physics

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## Major Areas of Research/Up to 3 major sponsored projects

- 1) Ultrafast terahertz quantum photonic devices/ superconductor photonics
- 2) Metamaterial photonic bio-molecular sensors with absolute specificity
- 3) Terahertz /optical pump and terahertz probe measurements of novel materials

## Major Research Facilities in the Group

Will be updated soon

## Technology/Product Developed/Up to 3 most significant Publications

- 1) Y. K. Srivastava, et. al. "A superconducting dual-channel photonic switch" Adv. Mater. 2018, 30, 1801257.
- 2) Y. K. Srivastava, et. al., "MoS<sub>2</sub> for ultrafast all-optical switching and modulation of THz Fano metaphotonic devices", Adv. Opt. Mater. 2017, 5, 1700762.
- 3) Y. K. Srivastava, et. al. "The Elusive High-T<sub>c</sub> Superinductor" 2022, arXiv:2209.01342, (under review)

