

Sumanta Kumar Sahu

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“Enthusiastically engaged in Teaching and Learning.”

Current Position

Dec 2019 – Degree College Lecturer

Rayagada Autonomous College, Rayagada, Odisha

Subject of Interest: Condensed Matter Physics, Non-linear Dynamics, Solar Cells

Teaching website: <https://sites.google.com/view/rac-physics>

Courses Teaching/Taught

UG level *Solid State Physics, Analog Systems and Applications, Electricity and Magnetism*

PG level *Condensed Matter and Materials Physics, Basic Solid State Physics, Quantum Mechanics*

Education

2016 – 2018 **Jawaharlal Nehru University**, New Delhi, India

Master of Science in Physics, specializing in *Experimental Condensed Matter Physics*

Thesis: Magneto-transport properties of Weyl semimetal Tungsten Ditelluride WT_{e_2}

Supervisor: Prof. Satyabrata Patnaik

FGPA: 7.18/9.00, equivalent to 76.8%

2013 – 2016 **Govt. College Autonomous**, now *Kalahandi University*, Bhawanipatna, Odisha

Bachelor of Science (with Honours), Physics with Mathematics

Percentage: 82.4%, Distinction

Research Experience

May-July 2017 **Summer Research Fellowship Program**, IIT Ropar, Punjab

Project title: **Higher order stop gaps in self-assembled Photonic Crystals**

Supervisor: Dr. Rajesh V. Nair

Sponsored by *IASc Bengaluru, INSA New Delhi* and *NASI Allahabad*

2018 Master's project work in *Experimental Condensed Matter Physics*

Project title: Magneto-transport properties of Weyl semimetal Tungsten Ditelluride WT_{e_2}

Supervisor: Prof. Satyabrata Patnaik, JNU

National Level Examinations

- Jun 2017 **Joint CSIR-UGC Exam**, NET with JRF, *Rank*: 210
Dec 2017 **Joint CSIR-UGC Exam**, NET, *Rank*: 128
2018 **GATE Physics Exam**, *Score*: 524, *Rank*: 615

Other Academic Certifications

- **PH526X: Using Python for Research**: successfully completed the course offered by *HarvardX*, an online learning initiative of *Harvard University*
- **Advanced Course on Special theory of Relativity**, a 3-months online course offered by *Centre for Continuing Education, IIT Kanpur* with performance marked *outstanding*
- Two semester course-work at *IIT Madras* during *Pre-PhD*
Courses: Solar Cells, Physics and Technology of Thin Films, Characterization of Materials and Physical Measurements, FEP, FTP
CGPA: 8.59

Coding Works

- **Shockley-Queisser detailed balance limit of efficiency for p-n junction Solar Cells**
Reproduced the results from *Shockley, W. & Queisser, H. J. Detailed balance limit of efficiency of p-n junction solar cells. J. Appl. Phys. 32, 510–519 (1961)*
- **Monte Carlo simulation and single Histogram Method**
Monte Carlo simulation was performed to compute various thermodynamic quantities like magnetization, average energy and specific heat for 8×8 spin lattice as a function of temperature.
Employing single Histogram method and taking a single Monte Carlo observable data, the observable was extrapolated over significant temperature range.
Agreement between the two methods was observed.
- **Chaotic systems and Lyapunov exponents**
Numerically calculated the lyapunov exponents for *Lorenz system* and *Rosler system* using python codes.

Technical Skills

- Languages Python, FORTRAN (basic knowledge), \LaTeX
OS Linux (Ubuntu), Windows
Softwares Libre Office, MS Office, Origin, Jupyter Lab and Others
Typing English typing 50+ words per minute (W.P.M.)

Language Proficiency

English	Professional working proficiency
Hindi	Bilingual proficiency
Odia	Native proficiency

Webinar Organised

- Webinar entitled ***Mysteries in Quantum World***
08th Jan 2021, <https://bit.ly/2Lr1Xan>
Role: Coordinator, Technical Person
- An international webinar on ***Nuclear Energy: Prospects and Challenges*** jointly with the Department of Chemistry, Rayagada Autonomous College.
24th Oct 2020, <https://bit.ly/2NOEPjL>
Role: Organising Secretary , Technical Person

Workshop/FDP/Webinar Participation

- One week faculty development program (FDP) on ***"Open Source Learning Management System: Modular Object Oriented Dynamic Learning Environment (MOODLE)"*** organized by *Department of Electronics Engineering, Aligarh Muslim University, Aligarh* in association with *Spoken Tutorial Project, IIT Bombay*
- Two-days online workshop on ***"Online Assessment and Evaluation"*** organized by *Jawaharlal Nehru University, New Delhi*
- Two-days online Professional Development Program for University and College teachers on ***"E-Content Development for MOOC and Online Teaching"*** organized by *UGC-HRDC, Jamia Millia Islamia, New Delhi*
- Two-days workshop on ***"Empowering Teaching through Online Mode"*** organized by *Jawaharlal Nehru University, New Delhi*
- Two-days webinar on ***"Material Science, Technology & Society"*** organized by *School of Physical Sciences, Jawaharlal Nehru University, New Delhi*
- Two-days workshop on ***"Perovskite Solar Cells"*** organized by *National Centre for Photovoltaic Research and Education (NCPRE), IIT Bombay*
- One-day ***ISMAMAM-2019 Pre-Conference Workshop on Advances in Nano-Scale Materials Characterization*** by *National Facility for Atom Probe Tomography (NFAPT), IIT Madras*
- Two-days workshop on ***"Atomic Force Microscopy (AFM)"*** organized by *Park Systems at IIT Madras*
- Webinar on ***Wonders of Physics*** conducted by *Anandpur Degree College, Odisha.*

Additional Information

- **Ranked 1** in *JNU all India Entrance Examination (JNUEE), 2016* in Physics
- Hands on experience in operating **X-Ray Diffractometer** (Rigaku SmartLab)