

ANNUAL REPORT-2022-23



DEPARTMENT OF PHYSICS

ରମାଦେବୀ ମହିଳା ବିଶ୍ୱବିଦ୍ୟାଳୟ, ଭୁବନେଶ୍ୱର
Rama Devi Women's University, Vidya Vihar,
Bhubaneswar

1. Name of the department: Physics

2. Vision and Mission

Vision:

- To produce students who can develop an atmosphere to attain excellence in physics globally and create enthusiasm, interest and passion in the study of physics.

Mission:

- To awaken the students and discover their skills both in theory and practical through dedication in teaching, and commitment towards students and using innovation teaching methods such as seminar, symposium, panel discussion, field trips, exhibition, role play etc.
- To develop strategy in the department such as simulation programme by using advance lab for example SCILAB, MAT lab, .C+, C++ etc.
- Research activity carry out in many frontier areas such as nanomaterial and their application, magnetic materials etc.
- Prepare graduates to take responsibilities as professionals with clear critical thinking skills.

3. Academic Programmes:

B.Sc (Physics) Honours

4. Publications

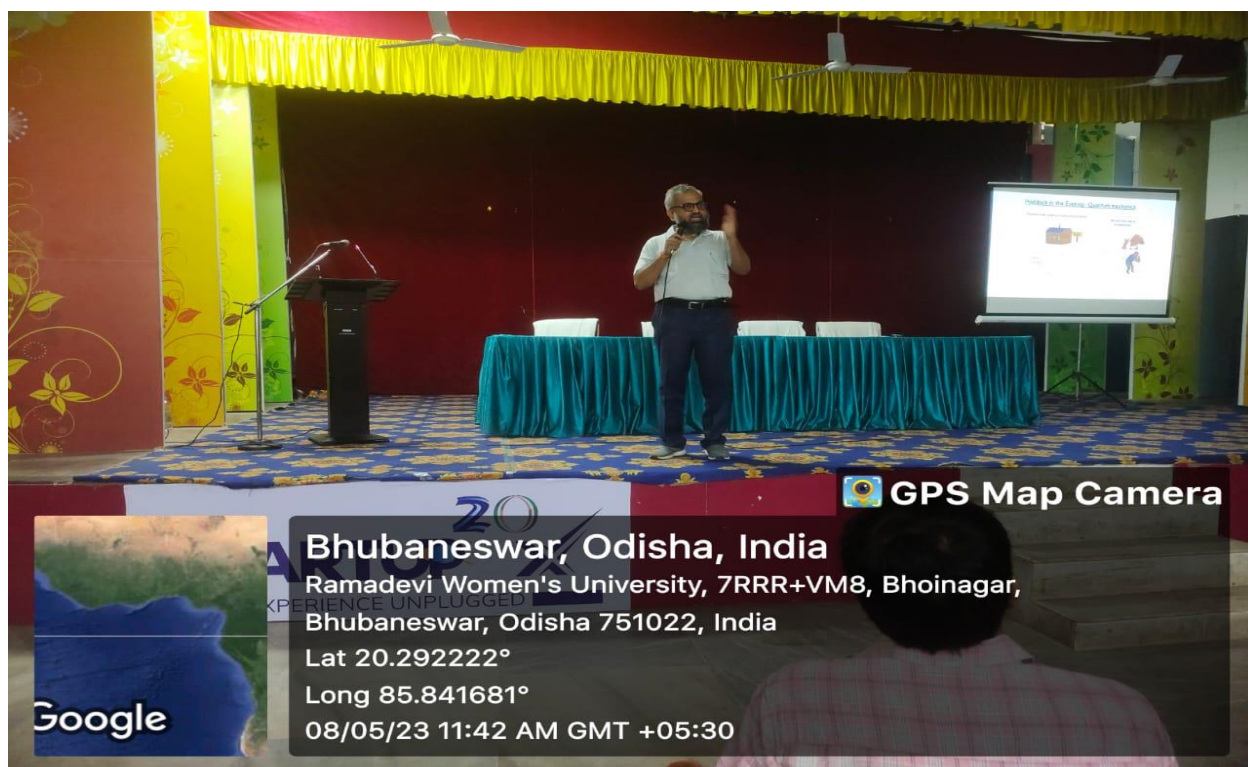
JOURNAL PAPERS

Sl no	Paper Title	Author(s)	Name of the Journal; Volume; Page no.	Year of Publication	Link to the article (doi/website)
1	Structural and Electrical Transport Features of Bi ₄ Ti _{2.9} Zr _{0.1} O ₁₂	Krishna Auromun, Premananda Pradhan, Ram Naresh Prasad Choudhary	Integrated Ferroelectrics	2023	DOI: 10.1080/10584587.2023.2239094
2	Structural and Electrical Characteristics of Manganese Modified BaTiO ₃ Ceramic	Krishna Auromun, Ram Naresh Prasad Choudhary	Ferroelectrics	20223	Accepted for publication

5. Seminars/FDPs/Workshops organized

The following programmes were conducted by physics department during the Academic year 2022-2023

- 1) Departmental level seminar on Atomic models and Harmonic oscillator by Dr. Sunirmal Saha and Prof. Lambodar Prasad Singh respectively. 16th March 2022
 - 2) "IANCAS Seminar on Wonder Materials" on 22nd July 2022
 - 3) Seminar on "Functional Materials for various energy applications" by Dr. Dilip Kumar Panda 19th April 2023
 - 4) A one-day Seminar on "Advanced Physics and Applications" By Prof. Pradip Kumar Sahu and Dr. Debakanta Samal. 8th May 2023.
 - 5) Study tour to IOP Bhubaneswar February 28th 2023
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1. Department of Physics organized a one day Seminar on "Advanced Physics and Applications" on 8th may 2023. On this day two seminars were given by two distinguished professors from IOP Bhubaneswar. One seminar by Dr. Debakanta Samal on the topic condensed matter physics. Another seminar by Prof. Pradip Kumar Sahu on "Fundamentals of Nuclear and Particle Physics: High Density nuclear matter and applications". Prof. Pradip Kumar Sahu, Registrar, IOP Bhubaneswar was the Chief Guest. The first seminar by Dr. Debakanta Samal focussed on giving the full understanding about what is condensed matter Physics and their respective applications in everyday life. The speaker also addressed the topics of noble laureates such as topology and Spintronics. The seminar of Prof. Pradip Kumar Sahu focused on the subject of fundamental particles of universe and energy production by high density nuclear materials. In this seminar the professor visualized the mechanism of nuclear fusion and nuclear fission which are the fundamental processes employed in nuclear power plants and energy in sun. Prof. Pradip Kumar Sahu highlighted the experiments of CERN (Large Hadron Collider) going in Switzerland where the higgs boson was discovered. After the seminar, the students were interacted with both the speakers and cleared the doubts during the questioner session. The seminar is ended with vote of thanks by the Prof. Raj Kumar Joshi, coordinator, department of physics.



2. A one-day seminar entitled “IANCAS Seminar on Wonder Materials” was conducted on 27/7/22 by the Indian Association of Nuclear Chemists & Allied Scientists -Eastern Regional Chapter (IANCAS-ERC), Bhubaneswar in collaboration with the Institute of Physics, Bhubaneswar, and Physics Department of RD University, Bhubaneswar. The purpose of the seminar is to give awareness on Nanotechnology and Nuclear energy, to the second year graduation Students. Students of Biotechnology, Botany, Zoology, Chemistry, Mathematics, Computer science, Physics and Statistics department attended the seminar. After the seminar an experimental session was conducted which was led by Dr. B. Mallick, Secretary, IANCAS-ERC. During the session student were given

opportunity to perform experiments on boyles law. Experiments with liquid nitrogen under the vigilance of Dr. B. Mallick were performed by students where the live fish was made frozen and made back to life. Students participated with enthusiasm and learned the experimental science. The seminar is ended with vote of thanks by Dr. Sujatha Mohanty, coordinator, department of physics.

3. A department level seminar was conducted on 16th March 2022 by physics department exclusively for physics students of UG course. Two resource persons from different research backgrounds were invited to the seminar. Dr. Sunirmal Saha from C V Raman Global University, Bhubaneswar was invited to give lecture on Atomic models. Prof. Lambodar Prasad Singh, a retired professor from Utkal University, was taken seminar on harmonic oscillator. Dr. Sunirmal Saha's seminar focused on explaining the journey of fundamental atomic physics concepts to advanced atomic models like vector atomic model. Prof. Lambodar Prasad Singh correlated the described the view points of classical theory, quantum theory, and quantum field theory's on simple harmonic oscillator. Students are exchanged ideas and clarified their doubts.
4. RDWU university international cell, in collaboration with Physics and chemistry departments, conducted a seminar by Dr. Dilip Kumar Panda on 19th April 2023. Dr. Dilip Kumar Panda took the seminar on "Functional Materials for various energy applications" which is his area of interest. The speaker completed his M.Sc program in NIT Roorkela and completed PhD in abroad and currently in research Assistant Professor in the Department of Materials Science and Engineering, Clemson University, USA. He shared his experiences he gone through while pursuing higher education and growing in career. He shared about the conversations he had with one of The Noble Laureate in chemistry. The seminar mainly focused on materials used in solar cells and other photonic devices. Various synthesis methods and characterization techniques were discussed during the seminar. Students were interacted with the speaker and known about the pathway of the research career in abroad.
5. The students of Physics department RDWU university went for a Research Lab tour to IOP Bhubaneswar on 28th Febraury 2023 during the occasion of National science day. During the visit students have seen sophisticated instruments which are only available in IOP Bhubaneswar. The particle accelerators such as LINAC, Cyclotron, Synchrotron and

synchro-cyclotron were discussed during the visit. Students also performed live experiments such as Newtonian fluid, total internal reflection and Hologram. Design of Sensor devices, using electrical and electronic components, and their applications to measure blood pressure, heart rate, oxygen level in blood and water level in water tank have been demonstrated. Students were trained to build the digital circuits by themselves for various applications.