

Piyush Pallav

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Objective:

"I am fascinated by science and love doing experiments to understand how things work and interact. My main goal is to explore these mysteries and uncover their secrets. I am passionate about both research and teaching, and I want to share my knowledge with others to inspire them to explore science too. I hope to make big discoveries that can improve our understanding and have practical uses, such as better energy solutions and medical technologies. I am also very interested in engineering and technology. I believe that exploring these fields can lead to amazing advancements that can benefit everyone."

Education:

• Integrated M.Sc. (Applied Physics) - Central University of Jharkhand, Brambe, Ranchi (Aug 2013 - Dec 2018)

Result : CGPA of 7.08.

• 10 + 2 - St. Xaviers Jr/Sr School

Result : 69 %

• 10 th – DAV Public School , Muzafferpur , Bihar

Result : 82 %

Computational Skills

- **Linux System:** Proficient in using and managing Linux operating systems.
- **C++:** Skilled in programming with C++ for scientific and technical applications.
- **Python:** Experienced in using Python for data analysis, simulation, and scripting.
- **MATLAB:** Proficient in using MATLAB for data analysis, modeling, and simulations.
- **GEANT4:** Expert in using GEANT4 for simulating high energy physics experiments and particle detection systems.

Laboratory Experience

- Extensive experience in setting up, maintaining, and operating advanced laboratory equipment in various research settings.
- Proficient in using and developing particle detection systems, including COSMIC Hunter muon detectors and Thick Gas Electron Multipliers.
- Skilled in conducting high-precision experiments and data analysis related to nuclear physics, high energy physics, and atmospheric studies.
- Experienced in guiding and mentoring students in their research projects and dissertations.
- Expertise in using simulation tools like GEANT4 and software such as MATLAB and LABVIEW for data acquisition and analysis.
- Hands-on experience with vacuum technology, nuclear instrumentation, and satellite data processing.

Research Experience:

• Project Associate

ADAMAS University, Barasat, Kolkata

April 2023 – Present

• Project Work:

- Engaged in the project "Imaging of Archaeological and Civil Structures using Atmospheric Muons (IACSAM)," funded by SERB, Department of Science & Technology, Government of India.
- Developing Thick Gas Electron Multipliers for advanced muon tomography applications with collaboration with Saha Institute of Nuclear Physics (SINP), Kolkata.
- Leading the development of a portable and eco-friendly muon detection system.

• Laboratory Work and Maintenance:

- Working with the COSMIC Hunter muon detector setup to analyze cosmic ray data.
- Experienced in setting up and maintaining sophisticated equipment in the Radiation Lab at ADAMAS University.

• Mentorship and Guidance:

- Guiding two MSc students in their dissertation projects, providing mentorship and technical support.
- Assisting students in mastering complex concepts in high energy physics and experimental setups and computational simulation related to high energy physics based on GEANT4.

• Technical Expertise:

- Gaining expertise in GEANT4 for simulating high energy physics experiments and particle detection systems.
- Conducting simulations related to high energy physics and particle detection systems to enhance experimental precision and outcomes.

• Project Fellow

Victoria Institution (College), Kolkata

October 2019 – March 2023

• Collaborative Research:

- Participated in the Collaborative Research Scheme (CRS) of UGC DAE CSR, Kolkata Centre.
- Successfully completed the project "Role of Intruder Orbitals for Generation of High Spin States in Mass 190 Region."
- Conducted extensive experimental research, contributing to a deeper understanding of high spin states in nuclear physics.
- Prepared to submit a research paper detailing the findings of this project within the year.

• Laboratory Work and Maintenance:

- Gained significant experience working with the Indian National Gamma Array (INGA) at VECC, Kolkata.
- Involved in the setup, maintenance, and operation of complex experimental apparatus.
- Carried out detailed experiments to study nuclear structure and high spin states..
- **Technical Expertise:**
 - Developed skills in the setup and maintenance of radiation lab equipment.
 - Applied advanced techniques and methodologies in experimental nuclear physics to ensure accurate data collection and analysis.
- **Research and Data Analysis:**
 - Performed detailed data analysis to interpret experimental results.
 - Collaborated with other researchers and institutions to enhance the quality and impact of the research.

● **Project Student**

Saha Institute of Nuclear Physics (Nuclear Physics), Kolkata

January 2019 – March 2019

- **Technical Contributions:**
 - Contributed to vacuum technology and nuclear instrumentation.
 - Worked with different types of vacuum pumps and learned basic experimental techniques related to nuclear physics.

Project Student

Saha Institute of Nuclear Physics (Astroparticle and Cosmology), Kolkata

March 2019 – September 2019

- **Project Work:**
 - Involved in prototyping superheated liquid detectors for dark matter detection.
 - Contributed to the project on background study at 555 meters underground using superheated emulsion detectors.
 - Learned about the fabrication process of superheated liquid detectors and their operations.
 - Gained experience with data acquisition systems based on LABVIEW for monitoring and analyzing detector data.

MSc Project

Central University of Jharkhand

August 2017 – August 2018

- **Project Description:**
 - Undertook the project as part of the partial fulfillment for the degree of Integrated M.Sc in Applied Physics.

- Topic: Binding Energy of Quarkonia in Isotropic Medium.
- **Key Responsibilities:**
 - Conducted all data analysis and modeling using MATLAB.
 - Analyzed the binding energy of quarkonia in an isotropic medium, applying advanced computational techniques.
 - Interpreted and presented results to contribute to the understanding of quarkonium binding properties.

Project Intern – Space Application Centre - Indian Space Research Organization (ISRO)

Internship through the SMART Programme at SAC-ISRO, Ahmedabad
2016 and 2017

- **Internship Details:**
 - Completed internships through the SMART Programme at Space Application Centre (SAC-ISRO), Ahmedabad.
 - Focused on the spatio-temporal variation of fog and validation of fog products.
- **Learning Experience:**
 - Learned about satellite data processing and the basics of atmospheric sciences.
 - Developed a fog forecast model based on clustering of different parameters.
 - Acquired knowledge of satellite data archival systems used for Indian satellites, especially Indian National Satellite System 3D (INSAT-3D).
- **Key Contributions:**
 - Contributed to the validation and improvement of fog products using satellite observations.
 - Developed and implemented a fog forecast model independently, enhancing forecasting accuracy.

List of Publications:

- **Investigation of the cross sections of $^{nat}\text{Cu}(\alpha, x)^{66,67}\text{Ga}$, ^{65}Zn reactions.**
Journal of Radioanalytical and Nuclear Chemistry(2024)
Pankaj K. Giri, S. Dasgupta , A. Sharma , K. Basu, S. S. Ghugre, J. Datta, G. Mukherjee, S. Bhattacharyya, P. Pallav, R. Raut.
- **Yrast and non-yrast Spectroscopy of N=117, 197 Hg nucleus**
Proceedings of the DAE Symp. on Nucl. Phys. 65 (2021).
P.Pallav ,S.Das Gupta , Soumik Bhattacharya, S.Bhattacharayya ,G.Mukherjee , S.Nandi , S.Dar , R.Banik , R.Raut , S. S.Ghugre , S.Das , S.Samanta , S.Chatterjee , S.Rajbanshi , Sneha Das , A.Goswami , S.Ray ,S.Ali , Rupsa Banik and S.Majumdar
- **The background study at 555 m deep underground with superheated emulsion detector**
Nuclear Inst. and Methods in Physics Research, A 1008 (2021) 165450.
Sunita Sahoo , Suraj Ali , Mala Das , Nilanjan Biswas , Piyush Pallav , Jisnu Basu

- **Deformed nuclear shapes around N, Z = 28 in A = 50 - 60 region.**
Proceedings of the DAE Symp. on Nucl. Phys. 65 (2021).
S. Basu , G. Mukherjee , S. Nandi , S. S. Nayak , S. Bhattacharyya ,Soumik Bhattacharya ,Shabir Dar , Sneha Das , S. Basak , D. Kumar , D.Paul , K. Banerjee , Pratap Roy , S. Manna , Samir Kundu , T. K. Rana ,T. Bhattacharjee , R. Pandey , S. Samanta , S. Chatterjee , R. Raut , S. S.Ghugre , H. Pai , A. Karmakar , S.Chattopadhyay , S. Das Gupta , P. Pallav ,R. Banik , S. Rajbanshi , S. Ali , Q.B. Chen , C.Bhattacharya.
- **Evidence of collective excitations at low and medium spin in 59 Ni.**
Proceedings of the DAE Symp. on Nucl. Phys. 65 (2021)
S. S. Nayak , S. Basu ,G. Mukherjee , S. Nandi , Shabir Dar , Sneha Das , S. Basak , Soumik Bhattacharya , D. Kumar , D.Paul , K. Banerjee , Pratap Roy , A. Sen , S. Manna , T.Ghosh , Samir Kundu ,T.K. Rana , T. Bhattacharjee , R. Pandey , S.S. Alam , S. Bhattacharyya ,C. Bhattacharya , S. Samanta ,S. Das , S. Chatterjee , R. Raut , S. S.Ghugre , U. Datta , H. Pai , P.Das , A. Bhattacharyya , S. Sadhukhan , S. De ,S. Malgope , S.Chattopadhyay , S. Rajbanshi , S. Das Gupta , P. Pallav , R.Banik , Md. A. Asgar , H. Ghosh , S. Ali
- **Calculation of theoretical Polarizations for N = 117, 197 Hg isotope.**
Proceedings of the DAE Symp. on Nucl. Phys. 66 (2022).
P. Pallav , S.Das Gupta , Soumik Bhattacharya ,S.Bhattachrayya, G.Mukherjee ,S. Nandi ,Shabir Dar , R. Banik , S.S. Ghugre ,S. Das ,S. Samanta ,S. Chatterjee ,S. Rajbanshi ,Sneha Das ,A. Goswami ,S. Ray , S. Ali ,Rupsa Banik , S. Majumdar ,R. Raut , and B. Mondal
- **Rotational band structure in odd A 55 Mn.**
Proceedings of the DAE Symp. on Nucl. Phys. 66 (2022).
S. Basu , G. Mukherjee , S. Nandi , S. S. Nayak , S. Bhattacharyya ,Soumik Bhattacharya ,Shabir Dar , Sneha Das , S. Basak , D. Kumar ,D. Paul , K. Banerjee , Pratap Roy , S. Manna , Samir Kundu , T.K.Rana , T. Bhattacharjee , R.Pandey , S. Samanta , S. Chatterjee , R.Raut , S. S. Ghugre , H. Pai , A. Karmakar , S.Chattopadhyay , S. Das Gupta , P. Pallav , R.Banik , S. Rajbanshi , S. Ali , and Q.B. Chen
- **Lifetime measurements of g 9/2 positive parity band in 57 Fe.**
Proceedings of the DAE Symp. on Nucl. Phys. 66 (2022).
S. Basu , G. Mukherjee , S. Nandi , S. S. Nayak , S. Bhattacharyya ,Soumik Bhattacharya ,Shabir Dar , Sneha Das , S. Basak , D.Kumar , D. Paul , K. Banerjee , Pratap Roy , S. Manna , Samir Kundu , T.K. Rana , R. Pandey , S.Samanta , S. Chatterjee , R. Raut , S. S.Ghugre , H. Pai , A. Karmakar , S.Chattopadhyay , S. Das Gupta , P.Pallav , R.Banik , S. Rajbanshi , S. Ali , Q.B. Chen , and C. Bhattacharya

Languages:

- Proficient in English (reading, writing, and spoken communication)
- Proficient in Hindi (reading, writing, and spoken communication)
- Proficient in Bangla (Spoken communication)

Awards:

Poster presentation, Patna University National Conference on Advancements and Innovations in physics 'A promises for society.'
Second Position.

Oral Presentation , ADAMAS University ok Imaging of civil structures using Atmosphere muons. , at 4th National Conference on Frontiers of Modern Physics (NCFMP 2024)