# Curriculum Vitae (CV)

Saradindu Samanta
Assistant Professor, Adamas University, Kolkata
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Educational Qualification:

| Qualification | Year of Completion | Institute Name | Subjects | Division | Briefing of work |
|---|---|---|---|---|---|
| Postdoctoral Researcher | 2023 - 2024 | University of Genoa | Experimental High Energy Physics / Neutrino Physics | | I am associated with 2 experiments. DUNE and ICARUS experiment. |
| Postdoctoral Researcher | 2022-2023 | Hebrew University of Jerusalem | Experimental Nuclear Physics | | I worked in data analysis in beta decay spectroscopy |

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| PhD | 2021 | UGC-DAE Consortium For Scientific Research | Experimental Nuclear Physics | | I worked in nuclear structure with particular interest in 64Cu and 61Ni<br><br>Thesis Title : Spectroscopy of Nuclei Around Doubly Magic 56Ni core. |
| M.Sc | 2012 | University of Calcutta | Physics with specialisation in Astroparticle Physics | First Class with 60.90% marks | |
| B.Sc (H) | 2010 | University of Calcutta | Physics | Second Class with 57% marks | |
| XII | 2007 | Tarakeswar Mahavidyalaya | Science Stream | First Class with 80% marks | |
| X | 2005 | Ramnagar N.B.P.C High School | General subjects | First Class with 83% marks | |

## Professional Experience:

- Research Interest:
  My research interest spreads mainly in two areas. First one is in experimental nuclear physics particularly gamma ray spectroscopy and second is in neutrino physics particularly in the DUNE and ICARUS experiment.

  1. Gamma ray spectroscopy : My main focus of work in experimental nuclear physics is to investigate the structure of nuclei using heavy-ion induced fusion evaporation reaction and high resolution, high efficiency

gamma detector array. The shape of nuclei draws a lot of attention from the nuclear physicist. For few nuclei the structure can be explained by shell model calculation, for few there is coexistence of different shapes. The evolution of shape from low excitation domain to high exciting domain is my main interest. I worked in nuclear astrophysics particularly in beta decay spectroscopy in postdoc tenure. So, it is one of the agenda of my research carrier.

2. Neutrino Physics research:

I work in neutrino physics with particular interest in DUNE and ICARUS experiment.The DUNE experiment will be performed in Fer milab, USA. I am associated mainly with DUNE near detector complex. The near detector complex comprises with three components. My main focus is on-axis SAND detector. SAND will be used to monitor the beam. It consists of one electromagnetic calorimeter, straw tube tracker as well as liquid argon target named GRAIN. I am working on the simulation based on the neutrino interaction on GRAIN. We produced various histograms which gives information about various quantity ( such as : no of interaction with tracks in GRAIN for all spill, the energy deposited by each neutrino interaction in GRAIN etc). We are trying to reconstruct the track the particles that will be leave track due to ionization of liquid argon. The photons will be detected by cameras inside the GRAIN.

- Computer Skills:
  Language Known → C, C++, Fortran, Python ;
  Operating System-→ Windows, Linux; Text Processing-→MS-Office, Latex; Plotting Software Known -→ Xmgrace, GNUplot, Origin, Matplotlib.
- Simulation Code Known-→ Geant4 (Basic), Pace4, Lise++, SRIM and TRIM
- Data Analysis Software Known-→ RADWARE, ROOT.

- Presented Talks:

1. Presented an oral seminar on “Gamma Spectroscopy of $^{64}$Cu” in DAE symposium on nuclear physics, in SINP , India in 2016.

2. Presented an oral seminar on “Nuclear Structure Study in the Vicinity of Doubly Magic 56Ni Core” in Wichita State University,Kansas, USA.

3. Presented a colloquium in University of Tokyo, Japan based on my PhD work.

- Certificate : Completed a course on advanced data science from The Knowledge Academy.

- Attended international DUNE collaboration meeting in CERN, 2024.

- Poster Presentations:

1. Spectroscopy of $^{61}$Ni in Proceedings of the DAE-BRNS Symp. on Nucl. Phys. 61,172 (2016).
2. Gamma Spectroscopy of $^{60}$Co in Proceedings of the DAE Symp. On Nucl. Phys., 62,268 (2017).

- Awards:

1. Qualified JEST exam (conducted by Department of Atomic Energy) in 2013 with a national rank of 258.
2. Qualified GATE exam (Conducted by Ministry of Human Resource and Development) in 2013 with a national rank of 278.

- List of Publications in International Journals:

1. **Single-particle excitations in the level structure of $^{64}$Cu**: S.Samanta et al. Physical Review C 97, 014319 (2018) .

2. **Single particle configurations in $^{61}$Ni**: S.Samanta et al. Physical Review C 99, 014315 (2019).

3. **Extending the application of DSAM to atypical stopping media**: S. Das, S. Samanta et al. Nuclear Inst. And Methods in Physics Research,A 841(2017) 17-23 .

4. **High spin γ-ray spectroscopy in $^{41}$Ca**: R. Bhattacharjee, S.Samanta et al. Physical Review C 94,054312 (2016).

5. **A Compton suppressed detector multiplicity trigger based digital DAQ for gamma-ray spectroscopy**: S.Das , S. Samanta et al. Nuclear Inst. And Methods in Physics Research, A 893 (2018) 138-145.

6. **Possible onset multifaceted excitation modes in $^{29}$Al** : H. Sultana, R. Bhattacharje, A. Chakraborty, M.A. Khan, S.S. Bhattacharjee, R. Chakrabarti, S. Das, U. Garg, S. S. Ghugre, R. Palit, R. Raut, S. Saha, S. Samanta et al. Physical Review C 98, 014330 (2018).

7. **Observation of signature partner bands in 117Sb** : R. Banik, S. Bhattacharyya, Soumik Bhattacharya, G. Mukherjee, R. Goswami, D. Choudhury, S. Das, S. Samanta et al. Physical Review C101,014322(2020).

8. **Revealing multiple band structures in 131Xe from α-induced reactions**: R. Banik, S. Bhattacharyya, S. Biswas, Soumik Bhattacharya, G. Mukherjee, S. Rajbanshi, Shabir Dar, S. Nandi, Sajad Ali, S. Chatterjee, S. Das, S. Das Gupta, S. S. Ghugre, A. Goswami, A. Lemasson, D. Mondal, S. Mukhopadhyay, H. Pai, S. Pal, D. Pandit, R. Raut, Prithwijita Ray, M. Rejmund, and S. Samanta, Physical Review C101,044306(2020).

9. **Quasi-γ band in 114Te**: Prithwijita Ray, H. Pai, Sajad Ali, Anjali Mukherjee, A. Goswami, S. Rajbanshi, Soumik Bhattacharya, R. Banik, S. Nandi, S. Bhattacharyya, G. Mukherjee, C. Bhattacharya, S. Chakraborty, G. Gangopadhyay, Md. S. R. Laskar, R. Palit, G. H. Bhat, S. Jehangir, J. A. Sheikh, A. K. Sinha, S. Samanta et al. Physical Review C101,064313(2020).

10. **First Observation of Multiple Transverse Wobbling Bands of Different Kinds in 183Au** : S. Nandi, G. Mukherjee, Q.B. Chen, S. Frauendorf, R. Banik, Soumik Bhattacharya, Shabir Dar, S. Bhattacharyya, C. Bhattacharya, S. Chatterjee, S. Das, S. Samanta et al. Physical Review Letters 125, 132501 (2020).

11. **Investigation of different possible excitation modes in neutron-rich 78As** : Amit Kumar Mondal, ....., S. Samanta et al. Physics Review C ,102 , 064311 (2020).

12. **Evidence of antimagnetic rotational motion in 103Pd** : Anupriya Sharma, ....., S.Samanta et al . , Physical Review C , 103, 024324 (2021).

13. **Observation of multiphonon transverse wobbling in 133Ba** : K. Rojeeta Devi,....., S.Samanta et al. , Physics Letter B, 823, 136756 (2021).

14. **Three-phonon multiplets in 116Sn** : Prithwijita Ray ,....., S.Samanta et al. , Nuclear Physics A , 1018, 122375 (2022).

15. **Evidence for competing bi-faceted compound nucleus fission modes in 232Th(α, f) reaction** : Aniruddha Dey , ....., S. Samanta et al. , Physics Letter B, 825, 136848 (2022).

16. **Magnetic rotational band in 116Sb** : Shabir Dar , ..... , S. Samanta et al . , Nuclear Physics A , 1019, 122382 (2022).

17. **Structural evolution and K mixing in 49V** : Y. Sapkota , ....., S.Samanta et al. , Physical Review C , 105 , 044304 (2022).

18. **Alignment effects in the medium-spin level structure of 78Se**: K. Mondal , ....., S. Samanta et al., Physical Review C , 105 ,034328 (2022).

19. **Different manifestations of triaxial shapes of the positive and negative parity bands in 187Os**: S.Nandi ,....., S. Samanta et al., Physical Review C , 105, 034336 (2022).

20. **Development of a zero-cost multichannel analyser based on digital signal processing for γ -ray spectroscopy using the PC sound card**: A. Jana……S.Samanta et al., Pramana-J.Phys. (2020) 94:20 .

21. **Single-particle configurations of the excited states of 203Po**: S. Chatterjee ,……., S. Samanta et al., Physical Review C, 106, 044329(2022).

22. Single-particle configurations of low- and medium-spin states in Cu 63: S. Chatterjee, ……, S. Samanta et al., Physical Review C, 107, 024312 (2023).

23. Search for the origin of wobbling motion in the A~130 region: The case of $^{131}$Xe: S. Chakraborty,……., S. Samanta et al., Physical Review C, 107,064318 (2023).

24. Investigation of the low- and medium-spin level structure in $^{77}$As: A. K. Mondal,…..,S. Samanta et al., Physical Review C, 107, 064320(2023).

25. Revealing new structures in odd-odd $^{54}$Mn nucleus: Sansaptak Basu,……, S. Samanta et al., European Physical Journal A, 59, 229(2023).

26. Study of the yrast and non-yrast states in 126Te: Atreyee Dey, A.K. Singh,……, S. Samanta et al., Physical Review C, 109, 044327 (2024)

27. Spectroscopy study of V50: Arkadip Bera, Abhijit Bisoi,…….., S. Samanta et al., Physical Review C, 109, 054328 (2024).

28. Calibration and Simulation of ionization signal and electrons noise in the ICARUS liquid argon time projection chamber: Icarus collaboration et al., July (2024).

29. Angular dependent measurement of electron-ion recombination in liquid argon for ionization calorimetry in the ICARUS liquid argon time projection chamber: ICARUS collaboration , July 2024.

- List Of Conference Proceedings:

1. VECC –INGA: An exploration of nuclear structure with light ions: S. Bhattacharya, R. Banik, S. Nandi, Sajad Ali, S. Chatterjee, S.Das, S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. , 63, 1156 (2018).

2. Digital Pulse Processing and DAQ System for INGA at VECC: S. Chatterjee, S.Das, S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. , 63, 1100 (2018).

3. Band structure of the 132Xe nucleus above the 5-ħ state: Suresh Kumar, Neelam, Papinder Singh, A. Sharma, S. Chatterjee, S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. , 63, 308 (2018).

4. Gamma Spectroscopy of 60Co : S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. , 62,268 (2017).

5. Nuclear Structure Studies in the A∼200 Region using INGA at IUAC : S. Chatterjee , A. Ghosh , S. Das , S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. 62 , 214, (2017) .

6. Band Structures and Single particle excitations in 117Sb : R. Banik, S. Bhattacharyya, Soumik Bhattacharya, R. Raut , S. S. Ghugre, S. Das, A. Dhal , A.Goswami , G. Mukherjee,S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. 62 ,124 (2017).

7. Quest for triaxiality and Wobbling rotation in 133Ba : K. Rojeeta Devi , Suresh Kumar , Naveen Kumar , Neelam , F. S. Babra , Md. S. R. Laskar , S. Biswas , S. Saha, P. Singh , R. Palit , S. Samanta et al. Proceedings of the DAE Symp. on Nucl. Phys. 62 ,308,(2017).

8. SPRINGZ: A New Program for Reduction of INGA Data in Zls Format : S. Das , S. Samanta et al.Proceedings of the DAE Symp. on Nucl. Phys. 62,1066 (2017).

9. Gamma Spectroscopy of 64Cu : S. Samanta et al. Proceedings of the DAE-BRNS Symp. on Nucl. Phys. 61,82 (2016).

10. High Spin States in 41Ca : R. Bhattacharjee , S. Das , S. Samanta et al. Proceedings of the DAE-BRNS Symp. on Nucl. Phys. 61,170 (2016).

- Links to Webpages:

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3. **ResearchGate: https://www.researchgate.net/profile/Saradindu-Samanta**

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