

Dr. Sajad Ali

Curriculum Vitae

Personal Details

Date of Birth	26/09/1992
Permanent address	Vill. Imamnagar, P.O. Meghasiara, Dist. Murshidabad, 742226 West Bengal, India
Present address	Department of Physics, Government General Degree College at Pedong, Rishi Road, Pedong Kalimpong, 734311, West Bengal, India
Nationality	Indian
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Present position

Assistant Professor
Department of Physics
Government General Degree College at Pedong
Rishi Road, Pedong
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India

Qualification Details

- Educational Qualification

Degree	University/ Institution	% of Marks Obtained	Year
Ph. D	Homi Bhaba National Institute India	In Physical Science	14.09.2020
Master of Science (M.Sc.)	University of Calcutta India	73.8 (First Class in Physics)	2015

Bachelor of Science (B.Sc.)	University of Calcutta India	71.5 (First Class in Physics)	2013
H. S. (10+2)	W. B. C. H. S. E.	82.8 (First Division)	2010
M. P. (10 th)	W. B. B. S. E.	78.625 (First Division)	2008

- Award: I. Junior Research Fellowship, UGC-CSIR, 2015
II. Best poster award at Frontiers in Gamma Ray Spectroscopy FIG18 at held at Tata Institute of Fundamental Research (TIFR).

Research Expertise

- I. Analysis of experimental data by the RADWARE, INGASORT, LINESHAPE software packages.
- II. Measurements of the sub-picoseconds level lifetimes through the Doppler Shift Attenuation Method (**DSAM**) and extraction of level lifetime by LINESHAPE analysis of the shifted spectrum.
- III. Experience on online Data Acquisition system in TIFR-BARC Pelletron.
- IV. Knowledge of FORTRAN and C programming Languages.

Research Activity

I have pursued my Ph.D. in Nuclear physics Division of Saha Institute of Nuclear Physics, India where, I have worked with low energy nuclear structure data from Indian National Gamma Array (INGA). My field of interest is to study the mechanism of generation of angular momentum for weakly deformed nuclei in the vicinity of $N/Z = 82/64$ shell/sub-shell closure.

Spectroscopic investigation of the weakly deformed transitional nuclei in the mass region $A \sim 140$ has generated considerable interest because they exhibit large variety of excitation mechanism. These nuclei are expected to be spherical at lower excitation energies and spin which can be interpreted quantitatively on the basis of spherical shell model calculations. At higher excitation energies, multi particle configuration along with its small deformation plays an important role in determining the level structures for these nuclei. Several novel phenomena, like

shape coexistence, shears mechanism, octupole correlation, chiral symmetry breaking etc. are exhibited in the excited spectrum of these nuclei in this mass region.

In the next phase of my research, a transition from planer solution, originate due to shears mechanism, to a non-planer case will be investigated. We have observed an indication of such a shift in the case of ^{141}Sm . To observe such a phenomenon, a specific experiment is planned with the INGA array. Chiral symmetry breaking will resulted in such a non-planer solution and the shift of total angular momentum vector to a plane not coinciding with the plane formed due to symmetry and deformation axis will be an interesting situation for spontaneous symmetry breaking for a finite fermionic system.

List of Publications

- In journal

1. “Search for the origin of wobbling motion in the $A \approx 130$ region: The case of ^{131}Xe ”
Sajad Ali in S. Chakraborty *et. al.*,
Phys. Rev. C **107**, 064318 (2023).
2. “Collective enhancement in nuclear level density of ^{72}Ga and ^{71}Ga from γ -gated proton spectra”
Sajad Ali in R. Santra *et. al.*,
Phys. Rev. C **107**, 064611 (2023).
3. “Evidence of transverse wobbling motion in ^{151}Eu ”
Sajad Ali in A. Mukherjee *et. al.*,
Phys. Rev. C **107**, 054310 (2023).
4. “Alignment effects in the medium-spin level structure of ^{78}Se ”:
Sajad Ali in K. Mandal *et. al.*,
Phys. Rev. C **105**, 034328 (2022).
5. “Different manifestations of triaxial shapes of the positive and negative parity bands ^{187}Os ”:
Sajad Ali in Soumen Nandi *et. al.*,
Phys. Rev. C **105**, 034336 (2022).
6. “Magnetic rotational band in ^{116}Sb ”:
Sajad Ali in Shabir Dar *et. al.*,
Nuclear Physics A **1019**, 122382 (2022).
7. “Collective Structures in ^{116}Sb ”:
Sajad Ali in Shabir Dar *et. al.*,
Physics of Particles and Nuclei **63**, 372 (2022).
8. “Three-phonon multiplets in ^{116}Sn ”:
Prithwijita Ray, H. Pai, Sajad Ali *et. al.*,
Nuclear Physics A **1018**, 122375 (2022).
9. “Experimental evidence of exact E(5) symmetry in ^{82}Kr ”:
Sajad Ali in S. Rajbanshi *et. al.*,
Phys. Rev. C **104**, L031302 (2021).
10. “Evidence of octupole correlation in ^{79}Se ”:
Sajad Ali in S. Rajbanshi *et. al.*,
Phys. Rev. C **104**, 064316 (2021).

11. “New lifetime measurement for the 2^+_1 level in ^{112}Sn by the Doppler-shift attenuation method”:
Sajad Ali in A. Kundu *et. al.*,
Phys. Rev. C **103**, 034315 (2021).
12. “Nuclear level density of ^{69}Zn from gamma gated particle spectrum and its implication on $^{68}\text{Zn}(n, \gamma)^{69}\text{Zn}$ capture cross section”:
Sajad Ali in Rajkumar Santra *et. al.*,
Physics Letters B **806**, 135487, (2020).
13. “Revealing multiple band structures in ^{131}Xe from α -induced reactions”:
Sajad Ali in R Banik *et. al.*,
Phys. Rev. C **101**, 044306 (2020).
14. “First Observation of Multiple Transverse Wobbling Bands of Different Kinds in ^{183}Au ”:
Sajad Ali in S. Nandi *et. al.*,
Phys. Rev. Lett. **125**, 132501 (2020).
15. “Quasi- γ band in ^{114}Te ”:
Prithwijita Ray, H. Pai, Sajad Ali *et. al.*,
Phys. Rev. C **101**, 064313 (2020).
16. “Investigation of different possible excitation mode in neutron rich ^{78}As ”
Sajad Ali in A. K. Mandal *et. al.*,
Phys. Rev. C **102**, 064311 (2020).
17. “Exploring the structure of Xe isotopes in $A \sim 130$ region: Single particle and collective excitations”:
Sajad Ali in R Banik *et. al.*,
EPJ Web of Conferences **232**, 04001 (2020).
18. “Evidence of the octupole correlation between shears bands in ^{142}Eu ”:
Sajad Ali *et. al.*,
Physics Letters B **798**, 134960, (2019).
19. “ ^{112}Sn target: Fabrication, characterization and application”:
H. Pai, Sajad Ali *et. al.*,
Vacuum **167**, 393-396 (2019).
20. “Extremely asymmetric shears band in ^{143}Sm ”:
S. Rajbanshi, R. Raut, H. Pai, Sajad Ali *et. al.*,
Phys. Rev. C **98**, 061304(R) (2018).

21. "Abrupt phase change of the core rotation in the ^{143}Sm nucleus":
S. Rajbanshi, R. Raut, H. Pai, Sajad Ali *et. al.*,
Physics Letters B **782**, 143 (2018).
 22. "Evidence of antimagnetic rotation in an odd-odd nucleus: The case of ^{142}Eu ":
Sajad Ali *et. al.*,
Phys. Rev. C **96**, 021304 (2017) (R).
 23. "Shears mechanism and development of collectivity in ^{141}Sm ":
S. Rajbanshi, **Sajad Ali** *et. al.*,
Phys. Rev. C **94**, 044318 (2016).
- In conference
 1. "Spectroscopic investigation of ^{140}Eu "
Sajad Ali *et. al.*
Proc. DAE Symp. on Nucl. Phys. **66**, 64 (2022).
 2. "Deexcitation of three particle - three hole structure in ^{142}Eu "
Sajad Ali *et. al.*
Proc. DAE Symp. on Nucl. Phys. **63**, 210 (2018).
 3. "Multipolarity assignment of $_I = 0$ transitions",
Sajad Ali *et. al.*
Zakopane Conference on Nuclear Physics Extremes of the Nuclear Landscape,
2018, Zakopane, Poland.
 4. "Assignment of multipolarity for $\Delta I = 0$ γ transitions from Polarization
measurements"
Sajad Ali *et. al.*
Proc. DAE Symp. on Nucl. Phys. **62**, 196 (2017).
 5. "Fabrication of ^{112}Sn target on ^{208}Pb -backing"
Sajad Ali *et. al.*
Proc. DAE Symp. on Nucl. Phys. **62**, 1132 (2017).
 6. "Search for unobserved transitions in ^{142}Eu "
Sajad Ali *et. al.*
Proc. DAE Symp. on Nucl. Phys. **61**, 212 (2016).

Name & Contact Details of the Ph. D Supervisor

Prof. Sukalyan Chattopadhyay

Senior Professor

High Energy and Particle Physics Division

Saha Institute of Nuclear Physics,

1/AF, Bidhannagar

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