CURRICULUM VITAE

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1. **Education :**
QUALIFICATIONS : Ph. D. in Theoretical Nuclear Physics

Examination & Date	Board / University	Division	Percentage
10+2 2000	J & K BOSE	First Class	66.17%
Bachelor of Science B.Sc. 2003	Kashmir University	First Class	63.39%
Master of Science M.Sc. June 2006	Kashmir University	First Class	73.52%
Master of Philosophy M.Phill. June 2010 Grade(Percentage %)	Kashmir University		Dt. of Reg. 24/08/07 Dt. of Sub. 05/05/10 Dt. of Award 13/10/10 A (79.5)
Doctor of Philosophy Ph. D. April 2014	Kashmir University	First Class	Dt. of Reg. 05/03/11 Dt. of Sub. 05/03/14 Dt. of Award 11/03/14
Total No. of Publications		126 (Reseach Papers) 10 (Submitted)	
Teaching Experience			Five years

1. For my Ph. D. degree, I have worked on Nuclear Structure (Theory) with title:

   Thesis Title: **Triaxial Projected Shell Model Study of Transitional Nuclei**

   Ph. D. Supervisor: **Prof. Sheikh Javid Ahmad.**

3. **Research Summary :**

During the last decade, research in nuclear theory has witnessed a discernable progress in the development of state-of-the-art models and techniques to elucidate the rich variety of shapes and structures in nuclei. There is a great optimism that in the coming years it should be possible to apply *Ab-initio* methods of Green's function , shell model and density functional theory, to investigate majority of the properties all across the nuclear periodic table with the availability of more powerful computing facilities. However, at the moment these methods have limited applicability and are used to describe nuclei in lighter mass regions or ground-state properties only. To study, for instance, the rich band structures observed in medium and heavy mass regions, alternative methods with moderate computational requirements ought to be explored.

Recently, TPSM approach has been developed to describe the rich band structures observed in well deformed and transitional nuclei. This model employs the basis that are solutions of the triaxial Nilsson potential and then three dimensional projection is performed to project out the states with well defined angular momentum quantum number. The advantage of this approach is that systematic studies of a large class of nuclei can be performed with a minimal computational effort. As a matter of fact, already a number of systematic investigations have been undertaken using this model and it has been demonstrated to reproduce the known experimental data remarkably well. This model has been applied to investigate a broad range of properties related to the triaxial degree of freedom of the nuclear deformation.

The basic strategy of the TPSM approach is similar to the spherical shell model model (SSM) with the only difference that deformed basis are employed for diagonalizing the shell model Hamiltonian rather than the spherical one. The deformed basis are constructed by solving the triaxial Nilsson potential with optimum quadrupole deformation parameters of ϵ and ϵ'. In principle, the deformed basis can be constructed with arbitrary deformation parameters, however, the basis are constructed with expected or known deformation parameters (so called optimum) for a given system under consideration. These deformation values lead to an accurate Fermi surface and it is possible to choose a minimal subset of the basis states around the Fermi surface for a realistic description of a given system. The Nilsson basis states are then transformed to the quasiparticle space using the simple Bardeen-Cooper-Schriefer (BCS) ansatz for treating the pairing interaction. As the deformed basis are defined in the intrinsic frame of reference and don't have well defined angular-momentum, in the second stage these basis are projected onto states with well defined angular-momentum using the angular-momentum projection technique. In the third and the final stage of the TPSM analysis, the projected basis are employed to diagonalize the shell model Hamiltonian.

4. **LIST OF RESEARCH WORKS IN INDEXED JOURNALS:**

1. *Coexistence of low-K oblate and high-K prolate $g_{9/2}$ proton-hole bands in ^{115}Sb*
   Shabir Dar,...,**G. H. Bhat**, J. A. Sheikh et al.,
   Physics Letters B, 138565 (2024)
   doi: https://doi.org/10.1016/j.physletb.2024.138565.

2. *Triaxial projected shell model study of the lowest rotational bands in thirty transitional and deformed nuclei*
   S.P. Rouoof, Nazira Nazir, S. Jehangir, G.H. Bhat, J.A. Sheikh, N. Rather and S. Frauendorf
   Eur. Phys. J. A 60:40 (2024)
   https://doi.org/10.1140/epja/s10050-024-01257-y

3. *Level structures of ^{96}Tc and their microscopic description*
   A K Rana,...**G. H. Bhat**, J. A. Sheikh et al.,
   J. Phys. G: Nucl. Part. Phys. 51 035104 (19pp) (2024)
   https://doi.org/10.1088/1361-6471/ad1f2e

4. *Theoretical perspectives of nuclear structure in $^{82-88}Ge$ and $^{66-74}Se$ isotopes*
   Simi Gupta, Ridham Bakshi, Surbhi Gupta, Suram Singh, Arun Bharti, **G. H. Bhat**, J. A. Sheikh,
   Eur. Phys. J. A 59:258 (2023)
   https://doi.org/10.1140/epja/s10050-023-01166-6

5. *Triaxial projected shell model approach for negative parity states in even-even nuclei*
   Nazira Nazir, S. Jehangir, S. P. Rouoof, **G. H. Bhat**, J. A. Sheikh, N. Rather, and Manzoor A. Malik
   Phys. Rev. C 108, 044308 Published 12 October (2023)
   DOI:https://doi.org/10.1103/PhysRevC.108.044308

6. *Theoretical analysis of shape transition and axial asymmetry in even-even Yb isotopes*
   Arun Gupta, Surbhi Gupta, Ridham Bakshi, Suram Singh, Arun Bharti, **G. H. Bhat**, JA Sheikh
   Eur. Phys. J. Plus 138, 785 (2023).
   https://doi.org/10.1140/epjp/s13360-023-04404-4

7. *Microscopic study of normal deformed bands in $^{167,169,171}Lu$*
   Mohd Faisal, Rani Devi, S. K. Khosa, **G. H. Bhat**, and J. A. Sheikh
   Int. Jourl. of Mod. Phys. E, 2350041, (2023) (27 pages)
   https://doi.org/10.1142/S0218301323500416

8. *Microscopic aspects of γ-softness in atomic nuclei*
   N. Nazir, S. Jehangir, **G. H. Bhat**, J.A. Sheikh et al.,
   PHYSICAL REVIEW C 107, L021303 (2023)
   Letter ——- Editors Suggestion
   DOI: 10.1103/PhysRevC.107.L021303

9. *Evidence of transverse wobbling motion in 151Eu*
   A. Mukherjee, S. Bhattacharya, T. Trivedi,..,**G. H. Bhat**, J. A. Sheikh et al.,
   https://journals.aps.org/prc
   PHYSICAL REVIEW C 107, 054310 (2023)
   DOI: 10.1103/PhysRevC.107.054310

10. *Revisiting the band structures in ^{118}Xe nucleus via in-beam γ-ray spectroscopy*
Sanjay Kumar Kumar Chamoli, Anand Pandey, **G. H.Bhat**, Ravi Bhushan, Rajesh P Singh, S. Muralither, Javid Ahmed Sheikh
Accepted Manuscript online 24 May 2023 2023 Chinese Physical Society
https://iopscience.iop.org/journal/1674-1137
DOI 10.1088/1674-1137/acd83d

11. *Three-quasineutron γ-band in ^{127}Xe*
Saikat Chakraborty, Hariprakash Sharma, Sheikh Jehangir, **Gowhar Hussain Bhat**, Javid Ahmed Sheikh et al.,
Journal of Physics G: Nuclear and Particle Physics
Accepted Manuscript online 24 May 2023 2023 IOP Publishing Ltd
https://iopscience.iop.org/journal/0954-3899
DOI 10.1088/1361-6471/acd86a

12. *Structural evolution and shape transitions of even-even neutron rich $^{140-150}Ba$ nuclei using triaxial projected shell model*
Ridham Bakshi, Rajat Gupta, Amit Kumar, Suram Singh, Arun Bharti, **G. H. Bhat**, J. A. Sheikh
Eur. Phys. J. A (2022) 58:253
https://doi.org/10.1140/epja/s10050-022-00902-8

13. *Study of normal deformed bands in light Lutetium isotopes*
Mohd Faisal, Rani Devi, S.K. Khosa, **G. H. Bhat**, J. A. Sheikh
Nuclear Physics **A 1030**, 122572 (2023).
https://doi.org/10.1016/j.nuclphysa.2022.122572

14. *Evidence for prolate-oblate shape coexistence in the odd-A $^{73}Br^{38}$ nucleus* S. Bhattacharya, T. Trivedi, A. Mukherjee, D. Negi, R. P. Singh, S. Muralithar, S. Jehangir , **G. H. Bhat** et al.,
PHYSICAL REVIEW C 106, 044312 (2022)
DOI: 10.1103/PhysRevC.106.044312

15. *Chiral-like doublet band structure and octupole correlations in 104Ag*
Kaushik Katre,..., **G. H. Bhat**, Nazira Nazir, J. A. Sheikh et al.,
PHYSICAL REVIEW C 106, 034323 (2022)
DOI: 10.1103/PhysRevC.106.034323

16. *Theoretical study of nuclear structure properties of positive parity states of odd mass $^{103-117}Ag$ nuclei*
Manvi Rajput, Suram Singh, Veerta Rani, Preeti Verma, Arun Bharti, **G. H. Bhat**, J. A. Sheikh
Eur. Phys. J. **A 58**, 146 (2022)
https://doi.org/10.1140/epja/s10050-022-00802-x

17. *Study of Nuclear Structure of NeutronRich EvenEven Tungsten Nuclei Within Theoretical Framework*
Rajat Gupta, Ridham Bakshi, Amit Kumar, Suram Singh, Arun Bharti, **G. H. Bhat** J. A. Sheikh
Brazilian Journal of Physics **52**, 174 (2022)
https://doi.org/10.1007/s13538-022-01173-w

18. *Extended triaxial projected shell model approach for odd-neutron nuclei*
S. Jehangir, Nazira Nazir **G. H. Bhat**, J.A. Sheikh et al.,
PHYSICAL REVIEW **C 105**, 054310 (2022).
DOI: 10.1103/PhysRevC.105.054310

19. *Microscopic insights into the nuclear structure of $^{98-106}Ru$ nuclei*
Ridham Bakshi, Rajat Gupta, Surbhi Gupta, Amit Kumar, Suram Singh, Arun Bharti, **G. H. Bhat**, *J. A. Sheikh*
Eur. Phys. J. **A 58**, *89 (2022).*
https://doi.org/10.1140/epja/s10050-022-00734-6

20. *Triaxial projected shell model study of γ-bands in even even $^{104-122}Cd$ nuclei,*
Manvi Rajput, Suram Singh, Preeti Verma, Veerta Rani, Arun Bharti,
G. H. Bhat, *J.A. Sheikh,*
Nuclear Physics **A 1019**, *122383 (2022),*
https://doi.org/10.1016/j.nuclphysa.2022.122383

21. *Three-phonon multiplets in ^{116}Sn,*
Prithwijita Ray, ..., N. Rather, **G. H. Bhat**, *J.A. Sheikh, A. Goswam*
Nuclear Physics **A 1018**, *122375 (2022).*
https://doi.org/10.1016/j.nuclphysa.2021.122375

22. *Triaxial projected shell model study of γ-bands in atomic nuclei*
S. Jehangir, **G. H. Bhat**, *J. A. Sheikh, S. Frauendorf, W. Li, R. Palit, N. Rather*
Eur. Phys. J. A **57**, *308 (2021).*

23. *Chiral vibrations and collective bands in $^{104,106}Mo$,*
B. Musangu, E. H. Wang, J. H. Hamilton, S. Jehangir, **G. H. Bhat**, *J. A. Sheikh et al.,*
Phys. Rev. **C 104**, *064318 (2021)*
DOI:https://doi.org/10.1103/PhysRevC.104.064318
https://doi.org/10.1140/epja/s10050-021-00620-7

24. *Systematic study of near-yrast band structures in odd-mass $^{125-137}Pr$ and $^{127-139}Pm$ isotopes*
S. Jehangir, **G. H. Bhat** *N. Rather, J. A. Sheikh, and R. Palit*
PHYSICAL REVIEW **C 104**, *044322 (2021)*
DOI : 10.1103/*PhysRevC*.104.044322

25. *Quasiparticle structure of low-lying yrast energy levels and γ-bands in $^{164-174}Hf$ nuclei*
Veerta Rani, Suram Singh, Manvi Rajput, Preeti Verma, Arun Bharti, **G. H. Bhat**, *J. A. Sheikh*
Eur. Phys. J. **A 57**, *274 (2021).*
https://doi.org/10.1140/epja/s10050-021-00583-9

26. *Corrigendum to "Two-phonon wobblingin ^{135}Pr" (Phys. Lett.***B 792**, *170-174 (2019))*
N. Sensharma, U. Garg, S. Zhu, A. D. Ayangeakaa, S. Frauendorfa, W. Lia, **G. H. Bhat**, *J. A. Sheikh*
Physics Letters **B 820**, *136556 (2021).*
https://doi.org/10.1016/j.physletb.2019.03.038

27. *Microscopic insight into the structure of negative parity yrast bands in $^{99-117}Pd$ isotopes*
Manvi Rajput, Preeti Verma, Suram Singh, Veerta Rani, Arun Bharti, **G. H. Bhat** *and J.A. Sheikh,*
Nuclear Physics **A 1014**, *122253 (2021)*
https://doi.org/10.1016/j.nuclphysa.2021.122253

28. *Systematic investigation of γ-band structure of triaxial even-even neutron-deficient Os nuclei*
Rajat Gupta, Amit Kumar, Suram Singh, Arun Bharti, **G. H. Bhat**, *J.A. Sheikh*
Chinese Journal of Physics 72, 191206 (2021).

29. *Evidence of antimagnetic rotational motion in ^{103}Pd*
A. Sharma, S. Muralithar, R. P. Singh, Indu Bala, S. S. Bhattacharjee, R. Garg, S. Jehangir, **G. H. Bhat**, *J.A. Sheikh, S. S. Tiwary, Neelam, S. Das, S. Samanta, R. Raut, S. S. Ghugre, P. V. Madhusudhana Rao, R. Palit, S. K. Dhiman, and U. Garg*
Phys. Rev. C 103, 024324 Published 25 February (2021).

30. *Investigation of the alignment mechanism and loss of collectivity in ^{135}Pm*
F. S. Babra, S. Jehangir, R. Palit , S. Biswas, B. Das , S. Rajbanshi, **G. H. Bhat**, *J. A. Sheikh, Biswajit Das, P. Dey, U. Garg, Md. S. R. Laskar, C. Palshetkar, S. Saha, 1 L. P. Singh and P. Singh*
PHYSICAL REVIEW C 103, 014316 (2021)
DOI: 10.1103/PhysRevC.103.014316

31. *Structural evolution of yrast and near-yrast bands in eveneven Pd isotopes using a self-consistent approach*
Ridham Bakshi, Surbhi Gupta, Suram Singh, Amit Kumar, Arun Bharti, **G. H. Bhat**, *J. A. Sheikh*
Eur. Phys. J. Plus 136: 25 (2021)
https://doi.org/10.1140/epjp/s13360-020-01004-4

32. *A detailed study of nuclear structure of odd-mass Pm isotopes near N=82 shell closure*
Veerta Rani, Amit Kuma, Suram Singh, **G. H. Bhat**, *J. A. Sheikh*
Eur. Phys. J. Plus 136: 22 (2021)
https://doi.org/10.1140/epjp/s13360-020-00974-9

33. *High-spin doublet band structures in oddodd $^{194-200}Tl$ isotopes*
S. Jehangir, I. Maqbool, **G. H. Bhat**, *J. A. Sheikh, R. Palit, N. Rather,*
Eur. Phys. J. A **56**, *197 (2020).*
https://doi.org/10.1140/epja/s10050-020-00206-9
Received: 4 May 2020 / Accepted: 23 July 2020

34. *Evolution of intrinsic nuclear structure in medium mass even-even Xenon isotopes from a microscopic perspective*
Surbhi Gupta, Ridham Bakshi, Suram Singh, Arun Bharti, **G. H. Bhat**, *J. A. Sheikh*
Chinese Physics C Vol. 44, No. **7**, *074108 (2020)*
DOI: 10.1088/1674-1137/44/7/074108

35. *Phenomenological description of non-axial shapes of some doubly even neutron deficient barium isotopes*
Ridham Bakshi, Surbhi Gupta, Suram Singh, Arun Bharti, **Gowhar H Bhat** *and J A Sheikh*
J. Phys. G: Nucl. Part. Phys. **47**,*075103 (20pp) (2020)*
https://doi.org/10.1088/1361-6471/ab81dd

36. *Quasi-γ-bands in ^{114}Te*
P. Ray, H. Pai, S. Ali, A. Mukherjee, A. Goswam, S. Rajbanshi, Soumik Bhattacharya, R. Banik, S. Nandy, S. Bhattacharyya, G. Mukherjee, C. Bhattacharya, R. Palit, **G. H. Bhat**, *S. Jehangir, J. A. Sheikh et al.,*
PHYSICAL REVIEW **C 101**, *064313 (2020)*
DOI: 10.1103/PhysRevC.101.064313
Impact Factor: 3.773

37. *Observation of Longitudinal Wobbling Mode in ^{133}La*
S. Biswas, R. Palit, U. Garg, **G. H. Bhat**, *S. Frauendorf, W. Li, J. A. Sheikh et al.,*
Eur. Phys. J. **A 55**, *159 (2019)*

38. *Shape evolution in ^{136}Sm*
F. S. Babra, R. Palit, S. Rajbanshi, **G. H. Bhat**, *J.A. Sheilkh et al.,*
PHYSICAL REVIEW C 100, 054308 (2019)
Impact Factor: 3.773

39. *Observation of Quasi γ-band in Te nuclei*
S. S. Tiwary, H. P. Sharma, **G. H. Bhat** *J. A. Sheikh et al.,*
Eur. Phys. J. A 55, 163 (2019)

40. *Two-phonon wobbling in ^{135}Pr*
N. Sensharma, U. Garg, S. Zhu, A. D. Ayangeakaa, S. Frauendorfa, W. Lia, **G. H. Bhat**, *J. A. Sheikh*
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Impact Factor: 5.670

41. *γ-vibration in ^{198}Hg*
S. Chakraborty, H. P. Sharma, S. S. Tiwary, **G.H. Bhat**, *J.A. Sheikh, R. Palit*
Eur. Phys. J. **A 55**, *46 (2019)*
https://arxiv.org/pdf/1807.10499
DOI 10.1140/epja/i2019-12707-5

42. *Microscopic insight into the nuclear structure properties of odd-mass $^{101109}Cd$ isotopes*
Preeti Verma, Suram Singh, Arun Bharti, S.K. Khosa, **G.H.Bhat**, *J.A. Sheikh*
Nuclear Physics **A 986**, *245 (2019)*
https://doi.org/10.1016/j.nuclphysa.2019.03.013
Impact Factor: 2.202

43. *Microscopic study of electromagnetic properties and band spectra of neutron deficient $^{133,135,137}Sm$*
*R. K. Pandit, R. K. Bhat, R. Devi, S. K Khosa,***G.H.Bhat**, *J. A. Sheikh*
Chinese Physics **C 43**, *124108 (2019)*

44. *Systematic study of two-quasiparticle structure of the neutron-rich odd-odd rubidium nuclei*
Surbhi Gupta, Suram Singh, Amit Kumar, Anuradha Gupta, Arun Bharti, **G.H. Bhat** *and J.A. Sheikh*
Chinese Journal of Physics 57, 338347 (2019).

45. *Microscopic description of Structural evolution in Pd, Xe, Ba, Nd, Sm, Gd and Dy isotopes*
Tabassum Naz, **G.H.Bhat**, *S. Jehangir, Shakeb Ahmad, J. A. Sheikh*
Nuclear Physics **A 00**, *1-20 (2018)*
Impact Factor: 2.202

46. *Quasiparticle and γ-band structures in ^{156}Dy*
S. Jehangir, **G.H.Bhat**, *J. A. Sheikh, S. Frauendorf, S. N. T. Majola, P. A. Ganai, and J. F. Sharpey-Schafer*
PHYSICAL REVIEW **C 97**, *014310 (2018)*
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47. *Investigation of quasi-particle structure of proton-hole indium nuclei*
Suram Singh, Amit Kumar, Surbhi Gupta, Arun Bharti, **G.H.Bhat**, *and J. A. Sheikh*
Eur. Phys. J. Plus **133**, *472 (2018)*
DOI 10.1140/epjp/i2018-12271-y

48. *Projected Shell Model Description of Positive Parity Band of ^{130}Pr Nucleus*
Suram Singh, Amit Kumar, Dhanvir Singh, Chetan Sharma, Arun Bharti, **G.H.Bhat**, *J.A. Sheikh*
Braz J Phys, 98, 52 (2018).

49. *Intrinsic properties of high-spin band structures in triaxial nuclei*
S. Jehangir, **G.H.Bhat**, *J.A. Sheikh, R. Palit and P.A. Ganai*
Nuclear Physics **A**, *968 48 (2017).*
Impact Factor: 2.202

50. *Structure and symmetries of odd-odd triaxial nuclei*
R. Palit, **G. H. Bhat**, *and J. A. Sheikh*
Eur. Phys. J. **A 53**, *90 (2017).*
DOI 10.1140/epja/i2017-12272-y

51. *Band Structures in* ^{101}Pd
V. Singh, S. Sihotra, **G.H. Bhat**, *J.A. Sheikh et al.,*
PHYSICAL REVIEW **C 95**, *064312 (2017).*
DOI: 10.1103/PhysRevC.95.064312
Impact Factor: 3.773

52. *Evolution of triaxial shapes at large isospin: Rh isotopes*
A. Navin, M. Rejmund, S. Bhattacharyy, R. Palit, **G. H. Bhat**, *J. A. Sheikh et al,*
PHYSICS LETTERS **B 767**, *480 (2017)*
Impact Factor: 5.670

53. *Possible very anharmonic one and two phonon* γ*-vibrational bands in* ^{103}Mo
J. Hunter, E. H. Wang, C. J. Zachary, J. H. Hamilton, A. V. Ramayya, **G. H. Bhat**, *J. A. Sheikh et al.,*
International Journal of Modern Physics E
Vol. 26, No. 5, 1750030 (2017)
World Scientific Publishing Company
DOI: 10.1142/S0218301317500306

54. *One and two phonon* γ*-vibrational bands in neutron rich* ^{107}Mo
J. Marcellino, E. H. Wang, C. J. Zachary, **G. H. Bhat**, *J. A. Sheikh et. al.,*
PHYSICAL REVIEW **C 96**, *034319 (2017)*
DOI: 10.1103/PhysRevC.96.034319

55. *Study of odd mass* $^{115-125}Sb$ *isotopes with the projected shell model calculations*
Dhanvir Singh, Arun Bharti, Amit Kumar, Suram Singh, **G. H. Bhat** *and J. A. Sheikh*
International Journal of Modern Physics E
Vol. 26, No. 6, 1750041 (2017)
World Scientific Publishing Company
DOI: 10.1142/S0218301317500410

56. *Investigation of the structure of core-coupled odd-proton Copper nuclei in fpg valence space using the Projected Shell Model*
Anuradha Gupta, Suram Singh, Arun Bharti, S.K. Khosa, **Gowhar H. Bhat**, *and J.A. Sheikh*

Eur. Phys. J. A **53**, *15 (2017)*
DOI 10.1140/epja/i2017-12202-1
Impact Factor: 2.373

57. *Rotational structure of odd-proton* $^{103,105,107,109,111}Tc$ *isotopes*
Amit Kumar, Dhanvir Singh, Suram Singh, Arun Bharti, **G.H.Bhat** *and J.A. Sheikh*
Eur. Phys. J. **A 53**, *(2017).*
DOI 10.1140/epja/i2017-12391-5

58. *A systematic study of band structure and electromagnetic properties of neutron rich odd mass Eu isotopes in the projected shell model framework*
Rakesh K. Pandit, Rani Devi1, S.K. Khosa, **G.H. Bhat**, *and J.A. Sheikh*
Eur. Phys. J. **A 53**, *201 (2017).*
DOI 10.1140/epja/i2017-12393-3

59. *Projected shell model description of positive parity band of* ^{130}Pr *nucleus*
Suram Singh, Amit Kumar, Dhanvir Singh, Chetan Sharma, **G.H.Bhat**, *J.A. Sheikh*
Braz J. Phys. 13 Nov. 13538-017-0541-9 (2017).
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60. *Structure of dipole bands in doubly odd* ^{102}Ag
V. Singh, S. Sihotra, S. S. Malik, **G. H. Bhat**, *R. Palit, J. A. Sheikh, et al*
PHYSICAL REVIEW **C 94**, *044320 (2016)*
Impact Factor: 3.773

61. *Unified description of rotational-, γ- and quasiparticle- band structures in neutron-rich Mo- and Ru- isotopes*
G. H. Bhat, *J. A. Sheikh, Y. Sun, and R. Palit*
Nuclear Physics **A 947**, *127-141 (2016)*
Impact Factor: 2.202

62. *Microscopic nuclear structure models and methods : Chiral symmetry, Wobbling motion and $\gamma-$bands*
Javid A Sheikh, **Gowhar H Bhat**, *Waheed A Dar, Sheikh Jehangir and Prince A Ganai*
Phys. Scr. **91**, *063015 (19pp) (2016)*

63. *Microscopic analysis of structure of odd mass* $^{119-127}I$ *Nuclei*
D. Sing, A. Gupta, A. Kumar, S. Singh, A. Bharti, **G. H. Bhat** *and J. A. Sheikh*
Nuclear Physics **A 952**, *4161 (2016)*
Impact Factor: 2.202

64. *Observation of a γ-band based on a two-quasiparticle configuration in* ^{70}Ge
M. Kumar Raju, P. V. Madhusudhana Rao, S. Muralithar, R. P. Singh, **G. H. Bhat**, *J. A. Sheikh et al*
PHYSICAL REVIEW **C 93**, *034317 (2016)*
Impact Factor: 3.773

65. *Theoretical study of triaxial shapes of neutron-rich Mo and Ru nuclei*
C. L. Zhang, **G. H. Bhat**, *W. Nazarewicz, J. A. Sheikh, and Yue Shi*
PHYSICAL REVIEW **C 92**, *034307 (2015)*
arXiv:1507.04686v1 [nucl-th] 16 Jul (2015)
Impact Factor: 3.773

66. *Low-lying states near the $I^{\pi} = 6^{+}$ isomer in ^{108}Ag*
J. Sethi, R. Palit, J.J. Carroll, **G. H. Bhat**, *J. A. Sheik., et al*
Journal of Physics G: Nuclear and Particle Physics
J. Phys. G: Nucl. Part. Phys. **43**, *015103 (15pp) (2015).*

67. *Quasi-particle structure of proton-hole cobalt isotopes*
A. Gupta, P. Verma, S. Singh, A. Bharti, S. K. Khosa, **G. H. Bhat** *and J. A. Sheikh*
Nuclear Physics **A 941**, *48-65 (2015)*
Impact Factor: 2.202

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G. H. Bhat, *J. A. Sheikh, Y. Sun, G. B. Vakil, and R. Palit,*
Published in Proceedings of Fourth JK Congress (2008)

b. Workshops, Seminars, Symposia and Conferences attended:

1. "Microscopic Nuclear Structure Models and Methods: Chiral Symmetry, Wobbling Motion and γ-bands" *UGC Sponsored National Seminar on Growth Points in Physics*, Organised by Deptt. of Physics, University of Kashmir, Srinagar-190 006, from 21st-23rd Oct. 2017.

2. Wobbling Motion: From Symmetry to Dynamics, 12th JK Science Congress : Organised by University of Jammu(March, 2-4, 2017)

3. Chirality: From Symmetry to Dynamics, 12th JK Science Congress : Organised by University of Jammu(March, 2-4, 2017)

4. "Chirality Symmetry Breaking in Triaxial Nuclei" INTERNATIONAL CONFERENCE IN NUCLEAR PHYSICS WITH ENERGETIC HEAVY ION BEAMS,
   Organised by Department of Physics, Panjab University, Chandigarh (March, 1518 2017).

5. "Training Workshop on Research Based Pedagogical Tools (RBPTs)",
   Organized by IISER Mohali in Collaboration with British Council, (January, 22-25, 2017).

6. TPSM study of gamma-band structures in 160Dy nucleus, National Conference on
   "Role of Maths and CS in Advancement of Physics" Organised by Deptt of Physics, Govt. Degree College, Kathua (February 26-27, 2016)

7. Effect of gamma-deformations in the description of the high spin band structures in the 106Mo nucleus, tional Conference on
   "Emerging Challenges in Nuclear and Many-Body Physics" Organised by University of Jammu (November, 10-11,2014)

8. Workshop on Astronomical Techniques and Science with Virtual Observations, Organised by University of Kashmir in Collaboration with IUCAA, Pune (September, 23-16, 2013)

9. Workshop on Stellar Astrophysics: Organised by University of Kashmir in Collaboration with IUCAA, Pune (Octobar, 24-26, 2011)

10. 6th JK Science Congress : Organised by University of Kashmir (2010)

11. 4th JK Science Congress : Organised by University of Kashmir (2008)

5. a. **Ph. D. Supervisor: Privided theoretical inputs to the Ph D. thesis of**

   1. S Jehangir Department of Physics, NIT srinagar

   2. F Babra Dept of Nuclear and Atomic Physics
      Tata Institute of Fundamental Reseach
      Mumbai 400 005, India

   3. Musangu, Brooks M < *brooks.m.musangu.*1@*vanderbilt.edu* >
      Graduate School of Vanderbilt University
      Nashville, Tennessee, United States

   4. Jasmine Sethi
      Research Scholar
      Dept of Nuclear and Atomic Physics
      Tata Institute of Fundamental Reseach
      Mumbai 400 005, India

b. **Presently providing theoretical expertise to**

1. Nazira Nazir
   Ph. D. Student
   Department of Physics
   University of Kashmir

2. Syed Peerzada Rouoof ¡sprouoofphysics27@gmail.com¿
   Department of Physics IUST Awantipora

3. Aaneeqa Bashir
   Ph D
   Department of Physics and Astronomical Sciences, Centre University Jammu

7. Awards and Achievements:

1. *Alburuj R. Rahman Prize: Best Ph. D. Thesis Award,*
   Sponsor:University of Kashmir in Collaboration with Ohio State University USA **(2013)**

2. *FeLLOW OF INDIAN PHYSICS ASSOCIATION, PHYSICS NEWS (ISSN : 0253-7583) Page 33, Vol. 50 No. 1, January-March 2020*

3. *Ist Prize: Best Oral Presentation on the Research Paper entitled "Wobbling Motion: From Symmetry to Dynamics"*
   Sponsor: University of Jammu, Jammu in Collaboration with JK State Science, Technology and Innovation Council *12th JK Science Congress (March, 2-4, 2017)*

8. Project Works:

1. "Noval Nuclear Structure Studies with Modern Theoretical Approaches" File No. CRG/2019/004960 (BP-2020-21-3860)
   Sanctioned by Science and Engineering Research Board (SERB)
   Total Cost: Rs. 3085896/- (Rs. Thirty Lakh Eighty Five Thousands Eight Hundred and Ninety Six only)

2. *To Remove the Infinities Between two Point Charged Particles in Quantum Electrodynamics. M. Sc. Project.*

3. *Symmetry-Projection in Mesoscopic Systems of Metallic Clusters and Atomic Nuclei. Sponsored by DST*

9. Specialization: a. M. Phill. Ph. D. :

1. Theoretical Nuclear Physics

Accademic Positions :

1. Dupty Proctor Cluster University Srinagar wide CUS order No. CUS/Proc/01/2022, Dated: 08/10/2022

2. Nodal officer Inter disciplinary Research Centre S. P. College Srinagar wide order No. SPC/1495, Dated: 09/09/22

Subjects Taught at PG/IG level:

1. Nuclear Physics

2. Mathematical Physics

3. Quantum Mechanics

4. Clasical and Quantum Electrodynamics

5. Quantum Field Theory

Work Experience :

- Teaching Experience at Islamic University of Science and Technology, Year from 06-03-2009 to 31-12-2009 and also from 08-03-2010 to 04-05-2010.
- One Year Teaching Experience at Department of Physics, University of Kashmir, Srinagar, Year (2010).
- Presently Teaching PG/IG/UG at Dept. of Physics S. P. College Srinagar 190 006. from 2016 to till date

10. **Research Experience : Software:**

- I have worked on both Axially Symmatric Projected Shell Model and Triaxial Projected Shell Model.
- I am comfortable with Fortran 77 and Fortran 90.
- For plotting and analysis: xmgrace.

11. **Research Interests and Future research plan:** Within theoretical nuclear physics, my general interest are:

- Identification of chiral geometry in even-even and odd-mass nuclei.
- Decay from long-lived isomeric states.
- Wobbling motion observed in strongly deformed nuclei.
- The major drawback in the TPSM model is the uncertainity in the strength parameters of the schematic interaction. Therefore, in future studies, we are planning to adopt a recently developed mapping procedure to microscopically determine the strength parameters. In this new approach, the energy surfaces obtained from the schematic effective interaction with free strength parameters are optimized to reproduce the energy surfaces retrieved from a realistic density functional approach (DFT).

12. **Referee:**

(a) Nuclear Physics A

(b) Department of Atomic Energy Government agency DAE

(c) Journal of Nuclear Physics, Material Sciences, Radiation and Applications https://jnp.chitkara.edu.in/index.php/jnp

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