

## Curriculum vitae

**Name:** Bhushan. Anil. Kanagalekar

**Date of Birth:** 02-11-1979

**Gender:** Male

**Nationality:** Indian

**Languages Known:** English, Hindi, Marathi, Kannada, Sanskrit.

**Present Affiliation:** Assistant Professor in Rani Channama University, Belagavi, Karnataka. **Permanent Address:** 180, SantSakharamMarg, Chidambarnagar, Angol extension, Belagavi – 590006, Karnataka

**Ph-No.:** (0831) 2480221

**Mobile:** 09483416432, 09969274043.

**E-mail:** bhushanak79@gmail.com

### **Educational Qualifications:**

<b>Degree</b>	<b>Branch of Specialisation</b>	<b>Name of college / University</b>	<b>Board</b>	<b>Year of Passing</b>	<b>Marks obtained</b>	<b>Remark</b>
PhD	Nuclear Physics	IIT, Bombay	---	2014	---	---
MSc	Nuclear Physics	Karnataka University, Dharwad	Karnataka University, Dharwad	2006	78.0%	First class (3 <sup>rd</sup> in the stream)
BSc	Physics, Chemistry, Maths	G.S.S.C college, Belgaum	Karnataka University, Dharwad	2004	73.7%	First class with Distinction
HSC	Physics, Chemistry, Maths	Devachand College, Nippani	Maharashtra Board of Higher Sec. Edu.	1997	71.5%	3 <sup>rd</sup> in class
SSC		Sainic School, Satara	Central Board of Sec. Edu. Delhi	1995	59.5%	---

**Awards / Scholarship:**

- Awarded CSIR NET JRF fellowship in December 2005.
- Qualified GATE 2006 in Physical sciences (Rank- 389)
- Qualified CSIR NET Examination again in June 2006.
- Qualified JEST 2006 in Physics (Rank – 256)

**Computer Expertise:**

- Programming: Fortran 90
- Proficiency in LINUX, Windows.
- Acquainted with LATEX and Python.

**Teaching Experience:**

- I have been working as an Assistant Professor at Rani Channamma University, Belagavi, Karnatakasince August 2013 to till date.
- I have been guiding students for GATE and NET exams preparation for last 5 years. And also motivated and guided students to pursue research in reputed institute.
- I have been delivering guidance seminars for GATE/NET preparation to MSc students of universities in Karnataka.

**Research Experience:**

I have done basic research in nuclear physics studying nuclear structure using heavy ion reactions. While studying gamma ray spectroscopy, I used data analysissoftwares like RADWARE and LAMPS.

**PhD thesis:**

I completed my Ph.D degree from Physics Department of IIT Bombay under the guidance of DrPragya Das. The title of my thesis was “Study of high spin states of  $^{126}\text{I}$  using heavy ion fusion reactions”. PhD degree has been recently awarded in August 2014.

The nuclei with odd number of protons and neutrons have shown many interesting behaviour in recent years. The thesis presents the investigations of spectroscopic properties

vizenergy levels, spin and parity for the nucleus  $^{126}\text{I}$ . This nucleus was populated by the heavy-ion reaction at the pelletron accelerator centre at IUAC, New Delhi. Experiments were performed using the multidetector array called the Indian National Gamma Array (INGA), consisting of fifteen Compton suppressed HPGe clover detectors. In  $^{126}\text{I}$ , seven bands have been established and 27 new  $\gamma$ -transitions have been added to the earlier level scheme. The experimentally determined DCO ratios were compared with the theoretical DCO curves to determine the multipolarities and mixing ratios of the  $\gamma$ -transitions. After finding the multipolarity of transitions, the spins of the states were assigned. Using the polarization asymmetry ( $\Delta$ ) of the interlinking transitions, the parity was assigned to different bands in the level scheme. We have assigned definite parity to six bands in  $^{126}\text{I}$  from our polarization measurements using clover detectors. The parity has been measured experimentally for the first time.

Theoretical calculations such as Total Routhian Surface (TRS) and Particle rotor model (PRM) were performed in order to assign the particle configuration. The most intensely populated band which has negative parity shows signature inversion. It has been assigned a particle configuration  $\pi d_{5/2} \otimes \nu h_{11/2}$ . Two of the other negative parity bands show a decoupled structure. They have been assigned a particle configuration,  $\pi g_{7/2} \otimes \nu h_{11/2}$  and  $\pi d_{5/2} \otimes \nu h_{11/2}$ , respectively based on the PRM calculations. The parity of one of the bands which was earlier assigned as negative was contradicted by our experimental measurements. It was assigned a positive parity. Hence, the possibility of the two positive parity bands being chiral partners has arisen.

We have discussed the PRM calculations assigning the two positive parity bands as chiral partners with the particle configuration  $\pi h_{11/2} \otimes \nu h_{11/2}$ . Thus, the earlier assigned particle configuration  $\pi d_{5/2} \otimes \nu (h_{11/2})^3$ , was contradicted.

**Research Projects Sanctioned:** My research project titled “Fusion Reaction Studies with weakly bound nuclei” was sanctioned by Board For Research in Nuclear Sciences (BRNS), with a funding of Rs. 25 lakhs, which also includes the appointment of a Junior Research Fellow (JRF). It also includes funding for purchasing a laptop worth Rs. 1 lakh and charged particle detector worth Rs 5 lakhs.

### **School/Symposium/Conferences attended:**

1. HomiBhabha Birth Centenary workshop on 'Frontiers in Gamma Ray Spectroscopy (FIG09)', at Tata Institute of Fundamental Research, Mumbai, March 2-4, 2009.
2. DAE-BRNS theme meeting on 'Expanding Horizons in Nuclear Physics', Bhabha Atomic Research Centre, Mumbai, June 9-10, 2009.
3. DAE-BRNS Symposium on Nuclear Physics, Bhabha Atomic Research Centre, Mumbai, December 8-12, 2009.
4. SERC school in September 2008.
5. **International conference on Nucleus Nucleus Collision NN2012, San Antonio, Texas, USA , 27th May to 2nd June, 2012.**
6. **My research paper titled "Fourth and fifth root of a number using Aryabhata's method" was presented as an oral presentation at the World Sanskrit Conference (WSC) 2015, held in Bangkok, Thailand from 28<sup>th</sup> June to 02<sup>nd</sup> July, 2015.**

### **Research publications:**

#### **a) In Journal:**

- 1) Triaxial nuclear shapes in  $^{126}\text{I}$ , **Bhushan Kanagalekar**, Pragya Das, Bhushan Bhujang, S. Muralithar, R. P. Singh, and R. K. Bhowmik, **Physical Review C 88, 054306 (2013)**.
- 2) Investigation of complete and incomplete fusion in the  $^7\text{Li}+^{124}\text{Sn}$  reaction near Coulomb barrier energies, V. V. Parkar, Sushil K. Sharma, R. Palit, S. Upadhyaya, A. Shrivastava, S. K. Pandit, K. Mahata, V. Jha, S. Santra, K. Ramachandran, T. N. Nag, P. K. Rath, **Bhushan Kanagalekar**, and T. Trivedi, **Physical Review C**, Volume 97, 014607 (2018), ISSN: 2469-9993, Impact factor: 3.13.
- 3) Fourth and fifth root of a number by Aryabhata's method, **Bhushan A Kanagalekar**, Selected research paper published after oral presentation at the World Sanskrit Conference (WSC) 2015, from 28<sup>th</sup> June to 2<sup>nd</sup> July 2015, at Bangkok, Thailand. ISBN: 978-93-87212-15-2, (Published in the year 2019).

- 4) Investigation of signature inversion in  $^{126}\text{I}$  through lifetime measurement, Himanshu Kumar Singh, Pragya Das, **Bhushan A Kanagalekar**, S. Muralithar and R. P. Singh, Physical Review C, 100, 064306.

**b) In conference Proceedings:**

i) Decoupling behaviour in nuclei with  $A \sim 130$ , Bhushan Kanagalekar and Pragya Das, Proceedings of the DAE symposium on Nuclear Physics, Volume 53, 259 (2008).

ii) First observation of high excited states in  $^{126}\text{I}$ , Bhushan Kanagalekar, Pragya Das, Bhushan Bhujang, Vivek Parkar, R. Palit, S. Muralithar, R.P. Singh and R.K. Bhowmik, Proceedings of the International symposium on Nuclear Physics, Volume 54, 78 (2009).

iii) Excited states of  $^{126}\text{Te}$  and  $^{129}\text{Xe}$ , Bhushan Bhujang, Pragya Das, Bhushan Kanagalekar, Vivek Parkar and R. Palit, Proceedings of the International symposium on Nuclear Physics, Volume 54, 82 (2009).

iv) Signature inversion in  $^{126}\text{I}$ , Bhushan Kanagalekar, Pragya Das, Bhushan Bhujang, S. Muralithar, R. P. Singh, and R. K. Bhowmik, Proceedings of the DAE symposium on Nuclear Physics, Volume 56, 440 (2011).

v) Excited states of  $^{126}\text{Te}$ , Virendra Pasi, Pragya Das, Bhushan Kanagalekar, Bhushan Bhujang, R. P. Singh, S. Muralithar, R. K. Bhowmik, Proceedings of the DAE symposium on Nuclear Physics, Volume 56, 442 (2011).

**In Abstract Book:**

Research work presented as invited talk titled "Nuclei with triaxial shapes" in Frontiers in Gamma-ray spectroscopy (FIG -2012), March 5-7, 2012, at IUAC, New Delhi, India from 5th to 7th March 2012.

**i) In the conference (unpublished):**

Large triaxial deformation in  $^{126}\text{I}$ , Bhushan Kanagalekar, Pragya Das, Bhushan Bhujang, S. Muralithar, R. P. Singh, and R. K. Bhowmik, Poster presented in the International conference on nucleus nucleus collisions, NN2012, May 27th to 1<sup>st</sup> June, 2012, at San Antonio, Texas, USA.

**Details of foreign visits:**

- 1) Visited USA to attend International conference on Nucleus-Nucleus collisions, NN2012, held in San Antonio, Texas, USA from 27th May to 2nd June, 2012. Presented a poster titled **“Large Triaxial deformation in  $^{126}\text{I}$ ”**.
- 2) Visited Thailand, to present a paper titled **“Fourth and fifth root of a number using Aryabhata’s method”** as an oral presentation at the World Sanskrit Conference (WSC) 2015, held at Bangkok, Thailand from 28<sup>th</sup> June to 02<sup>nd</sup> July, 2015.

**Recent Schools and Workshops attended:**

- 1) Attended School on Nuclear Reactions held at IUAC, New Delhi, from 6<sup>th</sup> Sept to 12<sup>th</sup> Sept 2015.
- 2) Attended the Workshop on Nuclear Reactions and Applications held at BARC Mumbai, from 2<sup>nd</sup> November to 12<sup>th</sup> November, 2016.
- 3) **Attended the orientation course held at University of Mumbai, from 5<sup>th</sup> January 2017 to 24<sup>th</sup> January 2017.**
- 4) **Attended Refresher Course in Statistical Mechanics held at Sri Ramakrishna Mission Vivekananda University, Kolkatta, from 9<sup>th</sup> to 23<sup>rd</sup> December 2018.**