

# Curriculum Vitae

## Dr. Bhushankumar Jagannath Patil

Associate Professor

Department of Physics,  
Abasaheb Garware College, Karve Road  
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### Educational Qualification

Degree	Name of University / Board	Year of Passing	% of Marks	Class / Grade
Ph.D. in Physics	University of Pune, Pune	2011	-	-
M.Sc. in Physics (Nuclear Techniques)	University of Pune, Pune -regular -Under Class Improvement Scheme	2003 2007	57.40 60.10	Higher Second First Class under
B.Sc. in Physics	North Maharashtra University, Jalgaon	2001	80.42	First Class with Distinction
H.S.C. (XII <sup>th</sup> )	Nasik Divisional Board	1998	62.33	First Class
S.S.C. (X <sup>th</sup> )	Nasik Divisional Board	1996	73.60	First Class
JEST 2004	92.30 percentile	(All India rank 305)		
SET 2015	Qualified SET examination held on 06 <sup>th</sup> Sept 2015.			

### Teaching Experience:

- **Associate Professor:** At Maharashtra Education Society's Abasaheb Garware College, Pune since **12 December 2023**
- **Assistant Professor:** At Maharashtra Education Society's Abasaheb Garware College, Pune **18 November 2011 to 11 December 2023 (12 Years)**.
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### Research Work Supervised

Student Awarded Ph.D. Degree: 03 (as a Co-Guide) , (Ongoing – 3 students)

### Research Experience:

**Ph.D. in Physics:** Thesis submitted date 28<sup>th</sup> Sept. 2010, Degree awarded date 08<sup>th</sup> Feb. 2011.

**Thesis Title:** Studies on (i) Characterization of Bremsstrahlung Spectra from High Z elements and (ii) Development of Neutron Source Using MeV Pulsed Electron Beam and Their Applications.

**Guide:** **Dr. S. D. Dhole** ([sanjay@physics.unipune.ac.in](mailto:sanjay@physics.unipune.ac.in)), Professor, Department of Physics, University of Pune, Ganeshkhind, Pune – 411007

**Research Publications:** **54** (37 International Journal & 17 International conference proc.)

**H index: 13 & I10 Index: 17**

## Research project: Four

### Research Projects:

- Title:** Study of depth dose distribution for 6 – 20 MeV energy electron accelerator based bremsstrahlung radiation therapy  
**Position held** Project Investigator  
**Total funds** Rs. 2,35,000/- **Funding agency:** BCUD, University of Pune, Pune  
**Duration:** Two years 2013-2015(Completed)
- Title:** Development of Nuclear Batteries using radioactive sources.  
**Position held** Project Co-Investigator  
**Total funds** Rs. 19,98,000/- **Funding agency:** ISRO-UoP Joint Research Programme  
**Duration:** Two years 2015-2017 (Completed)
- Title:** Measurement of formation cross section of metastable states of a few nuclei produced through Photon induced reaction.  
**Position held** Project Co-Investigator  
**Total funds** ~ 40 Lakhs **Funding agency** DAE-BRNS, Mumbai  
**Duration:** Two years 2017-2020 (Ongoing)
- Title:** A novel study on small field dosimetry in photon radiotherapy using indigenously developed phantom and TLD dosimeters: Monte Carlo Simulations and Experimental Approaches  
**Position held** Project Investigator  
**Total funds** Rs. 5,00,000/- **Funding agency:** RGSTC, SPPU,  
**Pune Duration:** Two years 2024-2026(Ongoing)

### Books Published:

- Contributed a chapter in “Radiation in Medicine and Biology” book compiled by Pandit Vidyasagar, Sagar Jagtap, et al, and published by **Pan Stanford Publishing**, Singapore.
  - **BJ Patil**, VN Bhoraskar, SD Dhole, Generation of bremsstrahlung radiation from different low to high Z targets for medical applications: A simulation approach, ISBN 9789814745925(Print)
- **Published Text books**
  - ‘Physics Principles and Applications & Electromagnetics’ Text book of F.Y.B.Sc. Physics, Success Publication, ISBN No. 978-93-84916-97-8
  - Computational Physics’ Text book of T.Y.B.Sc. Physics, Success Publication, 978-93-5158- 370-7

### Awards and Recognition

#### Fellowships

**UGC Dr. D.S. Kothari Post doctoral Fellow**, Department of Physics, University of Pune  
16<sup>th</sup> May 2011 – 17<sup>th</sup> Nov 2011  
Funded By: University Grant Commission, New Delhi. Mentor: Prof. M. A. More

**Senior Research Fellow**, Department of Physics, University of Pune  
1<sup>st</sup> June 2009 – 14<sup>th</sup> May 2011  
Funded By: Society for Applied Microwave Electronic Engineering and Research (SAMEER), Mumbai

**Junior Research Fellow**, Department of Physics, University of Pune  
15<sup>th</sup> July 2008 – 30<sup>th</sup> May 2009  
Funded By: DAE-BRNS, Mumbai

**Junior Research Fellow**, Department of Physics, University of Pune  
15<sup>th</sup> June 2004 – 14<sup>th</sup> July 2008  
Funded By: SAMEER, Mumbai

## **Professional Recognition:**

Selected by review committees at following places:

1. Received Financial Assistance from **University of Pune, Pune** under **Young Teacher Professional Travel Grant** Scheme to present research work in 11<sup>th</sup> European conference on Accelerators in Applied Research and Technology, Namur, Belgium.
2. Awarded **Travel Grant for College Teacher** by University Grant Commission (**UGC**), New Delhi to attend in **IBIC 2012** at Tsukuba, Japan during 01-04 October 2012.
3. Awarded **Young Scientist Grant** by **Chair, Program Committee**, International Beam Instrumentation Conference 2012 (IBIC'12) held at Tsukuba, Japan, hosted by High Energy Accelerator Research Organization, KEK, Japan.
4. Awarded **Foreign Travel Grant for Young Scientist /Research Scholars** by Council of Scientific and Industrial Research (**CSIR**), New Delhi to attend and present work in Particle Accelerator Conference 2011 (PAC'11) at New York, USA.
5. Awarded **Travel Fellowship** by Centre for International Co-operation in Science (**CICS**) to attend and present work in Particle Accelerator Conference 2011 (PAC'11) at New York, USA.
6. Awarded **Student Grant** to attend and present work in Particle Accelerator Conference 2011 (PAC'11) at New York, USA by Conference chair. PAC'11 was hosted by Brookhaven National Laboratory, and jointly sponsored by the IEEE Nuclear & Plasma Sciences Society and the APS Division of Physics of Beams.
7. Selected for **International travel support** by Department of Science and Technology (**DST**), New Delhi to attend and present work in 10<sup>th</sup> European conference on Accelerators in Applied Research and Technology, Athens, Greece.
8. Invited to attend the "School on Pulsed Neutrons: Characterization of Materials" to be held at the **Abdus Salam International Centre for Theoretical Physics (ICTP)**, Trieste, from 15 - 26 Oct. 2007 and provided **full financial support** to cover travel, accommodation and living expenses. Moreover, provided financial support for accommodation and living expenses for the period 27-23<sup>rd</sup> November 2007 under the **Federation Scheme** to University of Pune towards for carrying out literature survey at ICTP, Trieste, Italy.

## **Key-words suitable to research work:**

FLUKA simulation, Photon and Electron mode Medical LINAC, Bremsstrahlung, Neutron radiography, Accelerator based neutron source, Thermo luminescence Dosimetry, Computerized Glow Curve De-convolution, Nuclear reactions.

## **Specific area of discipline:**

- Accelerator Based Research for medical and industrial filed.
- Application of nuclear radiation to Medical Physics.
- Monte Carlo radiation transport simulation studies in materials.
- Thermoluminescence Dosimetry and De-convolution of Thermoluminescence spectra
- Radiation effects on nanoparticles / nanowires.
- Cross section measurement using Accelerator based neutron source

## **Instruments handling skill:**

- 6 MeV Race-Track Microtron.
- Low Energy Electron Beam Facility (Beam Energy: 500 eV to 20 KeV)
- 14 MeV Neutron Generator.
- Accelerator Based Neutron source

## **Educational Software being used:**

- Expertise in Monte Carlo based FLUKA and EGSnrc code (for calculation of particle transport and interactions with matter)

- LORENTZ (commercial package to study the charge particle trajectories in electrical and magnetic field)
- SIMION (for the charge particle trajectories in electric field)
- TCAD simulation tools (for semiconductor device simulation).

#### **Role in Projects completion:**

1. **Title:** Linear Accelerator Based Neutron Generator  
 Team members: One JRF, Project Investigator (P.I.) - Dr. S. D. Dhole  
 Position held: Junior Research Fellow Total funds sanctioned: ~ 10 Lakhs  
 Funding agency: MOU between Pune University and SAMEER, Mumbai  
 Duration: Four years 2004-2008
2. **Title:** Design and Development of (i) 270<sup>0</sup> Doubly Achromatic Beam Bending Magnet and (ii) Scattering Foil and Applicator System for dual photon energy and multiple electron energy integrated oncology system  
 Team members: One RF, One SRF, One Emeritus Scientist, P.I. - Dr. S. D. Dhole  
 Position held: Senior Research Fellow Total funds sanctioned: ~ 30 Lakhs  
 Funding agency: MOU between Pune University and SAMEER, Mumbai  
 Duration: Two years 2009-2011

**Computer Skills** : Programming language: Fortran, C, C++, Bash scripting.  
 Completed Certificate Course in Computer Application (CCCA)  
 Working knowledge of Linux and Window Operating System.

#### **Detail of Assignments carried out in foreign countries:**

1. Visited International Center for Theoretical Physics (ICTP), Trieste, **Italy** during 15<sup>th</sup> October 2007 to 23<sup>rd</sup> November 2007 to attend School on Pulsed Neutron, Workshop on Medical Physics and to carry out referencing work. Laboratory tour to Electra facility at Trieste, Italy.
2. Visited Athens, **Greece** during 12<sup>th</sup> September 2010 to 17<sup>th</sup> September 2010 to attend 10<sup>th</sup> European Conference on Accelerator in Applied Research and Technology.
3. Visited New York, **USA** during 28 March 2011 to 3 April 2011 to attend Particle Accelerator Conference 2011. Attended laboratory tour to Brookhaven National Laboratory, New York, USA.
4. Visited Tsukuba, **Japan** during 29<sup>th</sup> September 2012 to 4<sup>th</sup> October 2012 to attend International Beam Instrumentation Conference. Attended the laboratory tour to KEK, Tsukuba, Japan. Invited at AZ Electronic Materials, Shizouko, Japan for research meeting and visit to production plant.
5. Visited Namur, **Belgium** during 08<sup>th</sup> September 2013 to 12<sup>th</sup> September 2013 to attend 11<sup>th</sup> European Conference on Accelerator in Applied Research and Technology.

#### **Committees:**

1. Member Secretary, Committee of design of Curriculum Framework under NEP-2020, Marathi Bhasha Vidyapeeth, Ridhyapur, Amaravati
2. Working as Nodal Officer, MES Abasaheb Garware College, Pune (Since 2022 onwards)
3. Member, IQAC Committee, (2014-2023)
4. In-charge, Academic & Audit Committee, (2019-22)
5. Member, Placement Committee (2019-22)

#### **Extra Curricular Activity:**

1. **Editor**, Abstract Book, **National Symposium on Medical Biophysics** held at Department of Physics, S.P.Pune University, Pune on 25 – 26 Sept 2015.

2. **Member of Local Organizing Committee, National Symposium on Medical Biophysics** held at Department of Physics, S.P.Pune University, Pune on 25 – 26 Sept 2015.
3. **Coordinator, Intercollegiate Quiz competition** for Undergraduate students under the banner of Indian Physics Association held at A.G. College, Pune on 9<sup>th</sup> Jan 2015.
4. **Chairman** of Organizing Committee of **Raman Memorial Conference 2008** at University of Pune, Pune, organized by the research student of Department of Physics, University of Pune.
5. **Voluntary** work in National Seminar on ‘Application of Particle Accelerators’ 2007 at Pune organized by the Microtron Lab, Department of Physics, University of Pune at Pune
6. **Voluntary** work in International Host Lab Experiment on ‘Synthesis of Nano particles by Thermal Plasma’ 2004 organized by Department of Physics, University of Pune at Pune.
7. **Executive Member** of Indian Physics Association, Pune Chapter
8. **Life Member** of Indian Association of Physics Teachers, India

### Reference persons

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| <ol style="list-style-type: none"> <li>1. <b>Prof. S. D. Dhole</b><br/>Professor in Physics,<br/>Department of Physics,<br/>University of Pune,<br/>Ganeshkhind, Pune,<br/>Maharashtra 411007<br/>Email: <a href="mailto:sanjay@physics.unipune.ac.in">sanjay@physics.unipune.ac.in</a></li> <li>2. <b>Dr. S. T. Chavan</b><br/>Scientist-D<br/>Society for Applied Microwave Electronics,<br/>Engineering &amp; Research,<br/>IIT Campus, Powai, PO Box No. 8448<br/>Mumbai 400076<br/>Email: <a href="mailto:sharcha123@yahoo.co.in">sharcha123@yahoo.co.in</a></li> </ol> | <ol style="list-style-type: none"> <li>3. <b>Prof. V. R. Ugale</b><br/>Principal,<br/>MES Abasaheb Garware College,<br/>Karve Road, Pune<br/>Email:<br/><a href="mailto:principal.agc@mespune.in">principal.agc@mespune.in</a></li> <li>4. <b>Prof. M. A. More</b><br/>Professor in Physics,<br/>Department of Physics,<br/>University of Pune,<br/>Ganeshkhind, Pune,<br/>Maharashtra 411007<br/>Email: <a href="mailto:mam@physics.unipune.ac.in">mam@physics.unipune.ac.in</a></li> </ol> |
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### Seminars, summer schools, conferences or research attended:

Outside India	
1. School on Pulsed Neutrons: Characterization of Materials, ICTP, Trieste, Italy.	2007
2. Workshop on Nucl. Data for Sci & Tech: Medical Appl., ICTP, Trieste, Italy.	2007
3. 10 <sup>th</sup> European Conf. on Accelerators in Applied Research and Technology Athens, Greece.	2010
4. 2011 Particle Accelerator Conference, New York, USA.	2011
5. 1 <sup>st</sup> International Beam Instrumentation Conference, Tsukuba, Japan	2012
6. 11 <sup>th</sup> European Conf. on Accelerators in Applied Research and Technology Namur, Belgium.	2013
In India	
7. International Host Lab Exp. on Synthesis of Nano particles by Thermal Plasma, Pune	2004
8. Indian Particle Accelerator Conference (InPAC) at VECC, Kolkata.	2005
9. International conference on Medical Physics at Chennai.	2005

10. DAE-BRNS Theme Meeting on EXFOR Compilation on nuclear data at BARC, Mumbai.	2006
11. International conference on Medical Physics at Bhubaneswar.	2006
12. Raman Memorial Conference, Pune	2007
13. National Seminar on Application of Particle Accelerators at Pune.	2007
14. Raman Memorial Conference, Pune	2008
15. DAE-BRNS Theme Meeting on Covariance Error Matrix in Nuclear Data and its Application in Reactor Fuel Cycle and Technology, Manipal	2008
16. DAE-BRNS Theme Meeting on 'Applications of Monte Carlo Methods in Nuclear Science and Engineering', Anushaktinagar, Mumbai	2009
17. Raman Memorial Conference, Pune	2009
18. Theme Meeting and International Workshop on "FLUKA Monte Carlo Code" (9 <sup>th</sup> FLUKA Course), Anushaktinagar, Mumbai	2009
19. Raman Memorial Conference, Pune	2010
20. National Seminar on Nanomaterials for Devices: Characterization and Applications, Pune	2010
21. International Conference on Accelerator Radiation Safety, BARC, Mumbai	2011
22. One Day workshop on Interaction of Physics teacher with DST Program Advisory Committee (PAC), Pune	2012
23. One Day workshop on Implementation of Credit System for PG Courses in Colleges affiliated to UoP, Pune	2013
24. National Conference on Functional Nanomaterials: Synthesis, Characterization and Application, Pune	2013
25. One day Awareness Programme on Radiological and Operational Safety Aspects for Research Accelerator Facilities	2015
26. National Conference on IRTCPs-2015, SSGMS College, Kopergaon	2015
27. National Symposium on Medical Biophysics, Pune	2015
28. International conference on Radiation Research –HHE, BARC, Mumbai	2016
29. National Conference on Luminescence and its Applications, RTM University, Nagpur	2016
30. International Conference on Advanced Materials Development & Performance, Pune	2017
31. International conference on Nanotechnology for Human Welfare, Pune	2018

## List of Publications

### International Journals Paper

1. KP Darekar, UB Gayake, L Chaudhari, S Panda, S Laskar, SD Dhole, Validation of Pencil Beam Scanning Proton Therapy Beam model for the small field stereotactic treatments. *Radiotherapy and Oncology* 206, S3559-S3560 (2025)
2. UB Gayake, BJ Patil, K Darekar, SD Dhole, L Chaudhary, S Laskar, Investigation of Spot Size Variations in Multiroom Proton Therapy Systems and Their Clinical Significance: An In silico Study *Journal of Medical Physics* 50 (2), 269-278 (2025)
3. UB Gayake, BJ Patil, K Darekar, GT Bholane, SD Dhole, L Chaudhary, Machine Description File-based Monte Carlo Simulation Modeling and its Validation Using Pencil Beam Scanning Proton Therapy Commissioning Data. *Journal of Medical Physics* 50 (2), 242-256 (2025)
4. GT Bholane, TS Ganesapandy, AB Phatangare, VD Bharud, BJ Patil, The flux weighted cross sections of Hf-179 ( $\gamma$ ,  $\gamma'$ ) Hf-179m and Hf-nat ( $\gamma$ , x) Hf-179m reactions at 8 MeV and 15 MeV bremsstrahlung end point energies. *Applied Radiation and Isotopes*, 174, 109739 (2021)
5. VS Panyam, S Rakshit, SD Dhole, BJ Patil, AP Das, GA Kossery, Establishment and Dissemination of Radiological Standards in the Field of Diagnostic Radiology in India. *Journal of Medical Physics* 46 (1), 33-40 (2021)

6. Tm-Tstop analysis and dosimetric properties of Ce doped BaB4O7 phosphor. Kishor H Gavhane, Mahesh S Bhadane, Akash S Bhoir, Preeti P Kulkarni, Bhushankumar J Patil, Vasant N Bhoraskar, Sanjay D Dhole, Shailendra S Dahiwal. *Journal of Alloys and Compounds* 817, 152805 (2020)
7. Design of electron beam bending magnet system for electron and photon therapy: A simulation approach. AA Shahzad, BJ Patil, ST Chavan, VN Bhoraskar, Sanjay Daga Dhole,. *Indian Journal of Pure & Applied Physics (IJPAP)*, 57(7), 492-497, (2019)
8. Methodology adopted to establish diagnostic X-ray beam qualities. Vinatha S Panyam, Sougata Rakshit, Sanjay D Dhole, Bhushan J Patil, A Greeshma Kossery, Mukund S Kulkarni. *Applied radiation and isotopes*, vol 150, 164, (2019)
9. TL properties of BaF2: Ce phosphor for high gamma ray dosimetry. Kishor H Gavhane, Mahesh S Bhadane, Akash P Jadhav, Bhushankumar J Patil, Vasant N Bhoraskar, Shailendra S Dahiwal, Sanjay D Dhole. *Journal of Luminescence* vol 209, 316-320, (2019)
10. Production of <sup>99</sup>Mo and <sup>64</sup>Cu in a mixed field of photons and neutrons in a clinical electron linear accelerator. A Gopalakrishna, SV Suryanarayana, H Naik, BK Nayak, BJ Patil, S Devraju, RR Upreti, R Kinshikar, DD Deshpande, P Maletha, S Banerjee, A Saxena. *Journal of Radioanalytical and Nuclear Chemistry*, 317(3), 1409-1417, (2018)
11. Measurement and uncertainty propagation of the ( $\gamma$ , n) reaction cross-section of <sup>58</sup>Ni and <sup>59</sup>Co at 15 MeV bremsstrahlung. Reetuparna Ghosh, Bioletty Lawriniang, Sylvia Badwar, Santhi Sheela Yerraguntla, Haladhara Naik, Bhushankumar J Patil, Yeshwant Naik, Saraswatula Venkata Suryanarayana, Betylda Jyrwa, Srinivasan Ganesan. *Radiochimica Acta*, 106(5), 345-354, (2018)
12. Effect of lead foil on electron contamination to photon beam quality index: experimental and Monte Carlo study. AS Jagtap, SD Dhole, Nitin R Kakade, SD Sharma, BJ Patil. *Journal of Medical Physics*, 42(s1), 170, (2017)
13. A Shahzad, AB Phatangare, VD Bharud, MS Bhadane, CD Tahakik, BJ Patil, SS Dahiwal, ST Chavan, SN Pethe, SD Dhole, VN Bhoraskar. Design and development of the 6–18 MeV electron beam system for medical and other applications. ***Radiation Effects and Defects in Solids***, 172 (11-12), 931-951 (2017)
14. KR Sature, BJ Patil, SS Dahiwal, VN Bhoraskar, SD Dhole. Development of computer code for deconvolution of thermoluminescence glow curve and DFT simulation. ***Journal of Luminescence***, 192, 486-495 (2017)
15. Mehdi S Barough, VD Bharud, BJ Patil, FMD Attar, VN Bhoraskar, SD Dhole. Measurement and Estimation of Cross Sections for <sup>55</sup>Mn (n,  $\gamma$ ) <sup>56</sup>Mn and <sup>65</sup>Cu (n,  $\gamma$ ) <sup>66</sup>Cu Reactions Using Accelerator-Based Neutron Source. ***Nuclear Science and Engineering***, 187(3), 302-311 (2017).
16. Nandkumar T Mandlik, Vasant N Bhoraskar, Bhushankumar J Patil, PD Sahare, Sanjay D Dhole, SS Dahiwal. Thermoluminescence studies of CaSO4: Eu nanophosphor for electron dosimetry. ***Indian Journal of Pure & Applied Physics (IJPAP)***, 55(6), 413-419, (2017).
17. Bhadane, M.S., Dahiwal, S.S., Sature, K.R., Patil, B.J., Bhoraskar, V.N., Dhole, S.D. TL studies of a sensitive CaNa2(SO4)2:Dy nanophosphor for gamma dosimetry. ***Radiation Measurements***, 96, 1-7, (2017).
18. Bhadane, M.S., Dahiwal, S.S., Sature, K.R., Patil, B.J., Mandlik, N.T., Bhoraskar, V.N., Dhole, S.D.. Synthesis and TSL properties of SnO2:Eu nanophosphor for high gamma dosimetry. ***Journal of Alloys and Compounds***, 695, 1918-1923, (2017).
19. Mahesh S. Bhadane, K. Hareesh, S.S. Dahiwal, K.R. Sature, B.J. Patil, K. Asokan, D. Kanjilal, V.N. Bhoraskar, S.D. Dhole, A highly sensitive CaF2:Dy nanophosphor as an efficient low energy ion Dosimetry. ***Nuclear Instruments and Methods in Physics Research B***, 386, 61–69, (2016).
20. AS Jagtap, T Palani Selvam, B.J. Patil\*, ST Chavan, SN Pethe, Gauri Kulkarni, SS Dahiwal, VN Bhoraskar, SD Dhole, Monte Carlo based investigations of electron contamination from telecobalt unit head in build up region and its impact on surface dose. ***Applied Radiation and Isotopes***, 118, 175-181, (2016).
21. AS Jagtap, B.J. Patil, SS Dahiwal, VN Bhoraskar, SD Dhole, Electron depth dose curves in inhomogeneous medium for radiation therapy: A simulation approach. ***Physica Medica***, 32, 266-267, (2016).
22. M.S.Bhadane, N.T. Mandlik, B.J.Patil, S.S. Dahiwal, K.R. Sature, V.N. Bhoraskar, S.D. Dhole, CaSO4:Dy microphosphor for thermal neutron dosimetry. ***Journal of Luminescence***, 170, 226-230, (2016).
23. M.S. Barough, B.J. Patil, V.N. Bhoraskar, S.D. Dhole, Measurement and estimation of isomeric cross section of <sup>137</sup>Ba(n, n')<sup>137m</sup>Ba reaction using accelerator based neutron source. ***Annals of Nuclear Energy***, 63,209-214,

(2014).

24. Nandkumar Mandlik, P. D. Sahare, B. J. Patil, V. N. Bhoraskar, S. D. Dhole. Thermoluminescence study of  $K_2Ca_2(SO_4)_3:Cu$  nanophosphor for gamma ray dosimetry. Nucl. Instr. Meth B, 315, 273-277, (2013).
25. M.S. Barough, B.J. Patil, V.N. Bhoraskar, S.D. Dhole, Measurement of cross section of  $(n, \gamma)$  reaction for, iodine, sodium and vanadium in the energy range 1 keV to 4 MeV using accelerator based neutron source. Annals of Nuclear Energy, 59(1), 25-30, (2013).
26. B. J. Patil, A. J Patil, S. T. Chavan, S. N. Pethe, R. Krishnan, V. N. Bhoraskar, S. D. Dhole, FLUKA Simulation of 15 MeV Linear Accelerator Based Thermal Neutron Source for Radiography. Indian Journal of Pure and Applied Physics, 50(11), 814-817, (2012).
27. B. Lalremruata, N. Otuka, G. J. Tambave, V. K. Mulik, B. J. Patil, S. D. Dhole, A. Saxena, S. Ganesan, and V. N. Bhoraskar, 2012. Systematic study of  $(n, p)$  reaction cross sections from the reaction threshold to 20 MeV. Physical Review C 85, 024624, (2012).
28. Avinash V. Deore, B. J. Patil, V. N. Bhoraskar, S. D. Dhole, Design, development and characterization of a tetrode type electron gun system for generation of low energy electrons. Indian Journal of Pure and Applied Physics, 50(7), 482-485, (2012).
29. B. J. Patil, S. T. Chavan, S. N. Pethe, R. Krishnan, V. N. Bhoraskar, S. D. Dhole, Design of 6 MeV Linear Accelerator Based Thermal Neutron Source: FLUKA simulation and experiment. Applied Radiation Isotopes, 70(1) 149-155, (2012).
30. N.T. Mandlik, V.N. Bhoraskar, P.D. Sahare, B. J. Patil, V. Kumar, M.S. Kulkarni, S.D. Dhole, Thermoluminescence and Photoluminescence study of  $CaSO_4:Dy$  nanophosphor for 6 MeV energy electron dosimetry, Radiation Protection and Environment, 34(3), 185, (2011).
31. B. J. Patil, S. T. Chavan, S. N. Pethe, R. Krishnan, V. B. Bhoraskar, S. D. Dhole, Estimation of Neutron Production from Accelerator Head Assembly of 15 MV Medical LINAC using FLUKA Simulations. Nucl. Instr. Meth B, 269(24) 3261-3265, (2011).
32. B. J. Patil, S. T. Chavan, S. N. Pethe, R. Krishnan, V. N. Bhoraskar, S. D. Dhole, 2010. Simulation of  $e-\gamma-n$  targets by FLUKA and measurement of neutron flux at various angles for accelerator based neutron source. Annals of Nuclear Energy, 37(10) 1369-1377, (2010).
33. B. J. Patil, S. T. Chavan, S. N. Pethe, R. Krishnan, S. D. Dhole, Measurement of angular distribution of neutron flux for the 6 MeV race-track Microtron accelerator based pulsed neutron source. Applied Radiation of Isotopes, 68(9) 1743-1745, (2010).
34. B. J. Patil, S. S. Dahiwal, S. T. Chavan, S. N. Pethe, V. F. Khan, R. Krishnan, V. N. Bhoraskar and S. D. Dhole, Proposed Pulsed Neutron Source for Radiotherapy and Radiography. Journal of Medical Physics, Vol 32 [Suppl], s38, (2007).
35. B. J. Patil, S. K. Mahapatra, S. N. Pethe, S. T. Chavan, V. N. Bhoraskar, S. D. Dhole, Angular Distribution of Bremsstrahlung radiation from 6 and 15 MeV Pulsed electron beam incident on Tungsten target. Journal of Medical Physics, Vol 31 (3), 212, (2006).
36. S. K. Mahapatra, B. J. Patil, S. T. Chavan, V. N. Bhoraskar, S. D. Dhole, Automation of Low Energy Electron Irradiation System for Medical Application. Journal of Medical Physics, 31 (3), 211, (2006)
37. B. J. Patil, S. N. Pethe, S. T. Chavan, V. N. Bhoraskar, S. D. Dhole, Useful Bremsstrahlung spectra from linear and circular accelerators for radiation therapy: calculated and simulated case. Journal of Medical Physics, Vol 30 (4), 298, (2005).

### Full Papers in International Conference Proceedings

38. VD Bharud, AB Phatangare, AB Thorat, BJ Patil, SS Dahiwal, Cross sections of Indium isotopes through  $(\gamma, \gamma')$  reactions induced by bremsstrahlung with an end point energy of 6 MeV. Proceedings of the DAE Symp. on Nucl. Phys 66, 615 (2022)
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