




## Faculty Details proforma for DU Web-site

Title	Dr.	First Name	SHASHI	Last Name	VERMA	Photograph
Designation		<b>Assistant Professor</b>				
Address		Department of Physics and Astrophysics University of Delhi, Delhi-110007				
Phone No	Office	+91-11-27667725				
	Residence	H.No -2, Type IV, Teacher flats, Department of Social Work, University of Delhi				
	Mobile					
Email		sverma@physics.du.ac.in, vermasvin2006@gmail.com				
Web-Page						
<b>Educational Qualifications</b>						
Degree		Institution	Details		Year	
Ph.D.		University of Delhi	Experimental Nuclear Physics: Thesis topic : Study of Nuclear Reactions induced by Radioactive Ion Beams		2001-2007	
Pre Ph. D.		Inter University Accelerator Centre (Formerly Nuclear Science Centre), New Delhi	Accelerator based Experimental Nuclear Physics techniques, Nuclear Physics Theory		2001	
PG		University of Delhi, Hindu College	Physics		1999-2001	
UG		University of Delhi, Gargi College	Physics (Hons)		1999	
Any other qualification		NIIT, Gargi College Centre, New Delhi	Two years diploma in Network centered Computing ( Professional Diploma ,2yrs)		1996-1999	
<b>Career Profile</b>						
Designation		Organisation/Institution	Role		Duration	
Assistant Professor		University of Delhi	Teaching & Research		5th June 2008- till date	
Post Doctorate Fellow		Universidad de Santiago de Compostela, Spain	Research		2007-2008	
Senior Research Fellow, Council of Scientific and Industrial Research		University of Delhi	Research		2003-2006	
Junior Research Fellow, Council of Scientific and Industrial Research		University of Delhi	Research		2001-2003	
<b>Administrative Assignments</b>						
<b>Areas of Interest / Specialization</b>						
<b>Experimental Nuclear Physics</b>						
<ul style="list-style-type: none"> <li>• Nuclear reactions: Nuclear reactions involving Radioactive Ion Beam               <ul style="list-style-type: none"> <li>a) Influence of break-up of weakly bound nuclei (<math>^7\text{Be}</math>, <math>^7\text{Li}</math>) on elastic and fusion reaction channels.</li> <li>b) Optical model analysis on the available <math>^{14}\text{C} + ^{14}\text{C}</math> and <math>^{14}\text{C} + ^{12}\text{C}</math> elastic scattering data, using both shallow and deep</li> </ul> </li> </ul>						

potential, using modified optical model code GENOA.

- Experience with Radioactive Ion Beam facility and developing, testing of associated detector systems (Si-Surface Barrier Detectors and Gas Detectors for particle identification) for RIB experiments.
- Nuclear Spectroscopy: Beta decay half-lives and nuclear structure of heavy neutron rich nuclei produced by  $^{208}\text{Pb}$  fragmentation. Actively involved in experiments carried at GSI, Germany during stopped beam campaign using RISING (Gamma Detector Array).

#### Subjects Taught

Nuclear Physics Theory  
Nuclear and Particle Physics.  
Quantum Physics-I, II  
Experimental Nuclear Physics Laboratory  
Radiation Detection & Measurement

#### Research Guidance

#### Publications Profile

### **Research papers published in Refereed/Peer Reviewed Journals**

1. *Role of dynamical deformation in pre-scission neutron multiplicity by Neeraj Kumar, Shabnam Mohsina, Jhilam Sadhukhan, and Shashi Verma, Phys. Rev. C 96, 034614 (2017)*
2. *Relationship between and effect of inelastic excitations and transfer channels on sub-barrier fusion enhancement by Khushboo .... S. Verma ... et. al. Phys. Rev. C 96, 014614 (2017).*
3. *Negative-parity high- spin states and a possible magnetic rotation band in Pr7659135 by Ritika Garg ... S.Verma... et. al. Phys. Rev. C 92, 054325 (2015)*
4.  *$T_z = -1 \rightarrow 0$   $\beta$  decays of  $^{54}\text{Ni}$ ,  $^{50}\text{Fe}$ ,  $^{46}\text{Cr}$ , and  $^{42}\text{Ti}$  and comparison with mirror ( $^3\text{He}$ ,  $t$ ) measurements by F Molina ... S.Verma ... et. al. Phys.Rev. C 91, 014301 (2015)*
5. *Probing nuclear dissipation via evaporation residue excitation functions for the  $O^{16,18} + Pt^{198}$  reactions by Rohit Sandal... S.Verma... et. al. Phys. Rev. C 91, 044621 (2015)*
6. *Hindered Gamow-Teller Decay to the Odd-Odd  $N=Z$   $^{62}\text{Ga}$ : Absence of Proton-Neutron  $T=0$  Condensate in  $A=62$  by E. Grodner...S.Verma... et. al. Phys. Rev. Lett. 113, 092501 (2014)*
7. *Half-Life Systematics across the  $N=126$  Shell Closure: Role of First-Forbidden Transitions in the  $\beta$  Decay of Heavy Neutron-Rich Nuclei by A.I. Morales...S.Verma...*

- et. al. *Phys. Rev. Lett.* **113**, 022702 (2014)
8. *The population of metastable states as a probe of relativistic-energy fragmentation reaction* by A. M. DenisBacelar...S.Verma... et. al. *Phys. Lett. B* **723**, 302 (2013)
  9. *High spin states in  $_{57}^{135}\text{La}_{78}$  by Ritika Garg ... S.Verma... et. al.* *Phys.Rev. C* **87**, 034317 (2013)
  10.  *$\beta$ -delayed  $\gamma$ -ray spectroscopy of  $^{203,204}\text{Au}$  and  $^{200,202}\text{Pt}$  Nuclei* by A.I. Morales...S.Verma... et. al. *Phys.Rev. C* **88**, 014319 (2013)
  11. *Measurements and coupled reaction channels analysis of one- and two-proton transfer reactions for the  $28\text{Si} + 90,94\text{Zr}$  systems* by Sunil Kalkal...ShashiVerma... et. al. *Phys. Rev. C* **85**, 034606 (2012)
  12. *Multinucleon transfer reactions for the  $^{28}\text{Si}+^{90,94}\text{Zr}$  systems in the region below and near the Coulomb barrier* by Sunil Kalkal...S.Verma... et. al. *Phys. Rev. C* **83**, 054607 (2011)
  13. *Fusion and transfer reactions around the Coulomb barrier for  $^{28}\text{Si}+^{90,94}\text{Zr}$  systems* by Sunil Kalkal...S.Verma... et. al. *J.Phys.:Conf.Ser.* **312**, 082027 (2011)
  14. *Synthesis of  $N=127$  isotones through  $(p,n)$  charge-exchange reactions induced by relativistic  $208\text{Pb}$  projectiles* by A.I. Morales...S.Verma... et. al. *Phys. Rev. C* **84**, 011601(R) (2011)
  15. *Channel coupling effects on the fusion excitation functions for  $^{28}\text{Si} + ^{90,94}\text{Zr}$  in sub- and near-barrier regions* by S. Kalkal ...ShashiVerma... et. al. *Phys. Rev. C* **81**, 044610, (2010)
  16. *Interaction of loosely bound radioactive  $^7\text{Be}$  and stable  $^7\text{Li}$  with  $^9\text{Be}$*  by S. Verma et. al. *European Physical Journal A* **44**, 385–392, (2010)
  17. *Isomeric States in  $^{208}\text{Hg}$  and  $^{209}\text{Tl}$  Populated in Fragmentation of  $^{238}\text{U}$   $^{209}\text{Tl}$*  by N. Al-Dahan ...S.Verma... et. al. *Acta Phys.Pol.* **B40**, 871 (2009)
  18. *Nuclear structure “southeast” of  $^{208}\text{Pb}$ : Isomeric states in  $^{208}\text{Hg}$  and  $^{209}\text{Tl}$*  by N. Al-Dahan ...S.Verma... et. al. *Phys. Rev. C* **80**, 061302(R), (2009)
  19. *Angular Momentum Population in Fragmentation Reactions* by A.M. Denis Bacelar...S.Verma... et. al. *Acta Phys. Pol.* **B40**, 889 (2009)

20.  $\beta$ -Delayed  $g$ -Ray spectroscopy of Heavy Neutron Rich Nuclei "South" of Lead by A.I. Morales...S.Verma... et. al. *Acta Phys. Pol. B40*, 867 (2009)
21. Measurements of elastic scattering for  ${}^7\text{Be}$ ,  ${}^7\text{Li} + {}^9\text{Be}$  systems and fusion cross sections for  ${}^7\text{Li} + {}^9\text{Be}$  system by Shashi Verma et. al. *Eur. Phys. J. Special Topics* 150, 75 (2007)
22. Elastic scattering and fusion cross sections for  ${}^7\text{Be}$ ,  ${}^7\text{Li} + {}^{27}\text{Al}$  systems by K. Kalita...S.Verma... et. al. *Phys. Rev. C* 73, 024609, (2006)
23. Fission hindrance studies in  ${}^{208}\text{Pb}$  : Evaporation residue cross section and spin distribution measurements by P. D. Shidling...S.Verma... et. al. *Phys. Rev. C* 74, 064603 (2006)
24. Investigation of scattering between mirror nuclei  ${}^7\text{Be}$  and  ${}^7\text{Li}$  by S. Barua...S.Verma... et. al. *Phys. Rev. C* 72, 044602 (2005)
25. Optical model analysis of  ${}^{14}\text{C} + {}^{14}\text{C}$  elastic scattering using deep potential by Shashi Verma and Raghuvir Singh. *Eur. Phys. J. A* 23, 265 (2005)
26. Development of high efficiency annular detector system for RIB experiments at NSC by A. Jhingan ...S.Verma... et. al. *Nucl. Ins. Meth. A* 539, 269 (2005).
27. Development of a large area telescopic detector system for elastic scattering and transfer reaction angular distribution measurements by K. Kalita ...S.Verma... et. al. *Indian Jour. of Pure and Applied Physics* 43, 567-572, ( 2005).
28. Study of elastic scattering of mirror nuclei  ${}^7\text{Be} + {}^7\text{Li}$  by S. Barua ...S.Verma... et. al. *Nucl. Phys. A* 746, 467c, (2004)

Research papers published in Refereed/Peer Reviewed Conferences

#### **International Conferences Published**

1. Effect of shell structure on neutron multiplicity of fissioning systems  ${}^{220,222,224}\text{Th}$  nuclei. by Savi Goyal ...S. Verma...et. al., EPJ Web of Conferences 86, 00013 (2015) **ISSN (Electronic Edition): 2100-014X**
2. Dipole bands in high spin states of  ${}^{135}_{57}\text{La}_{78}$  by Ritika Garg, S. Kumar, Mansi Saxena, Savi Goyal, Davinder Siwal, and S. Verma R. Palit, Sudipta Saha, J. Sethi, Sushil K. Sharma, T. Trivedi, S. K. Jadav, R. Donthi, and B. S. Naidu S. Mandal AIP Conference proceedings 1609, 125 (2014) ISSN/ISBN Number : 978-0-7354-1245-3

3. *Fusion and transfer reactions around the Coulomb barrier for  $^{28}\text{Si}+^{90,94}\text{Zr}$  systems by Sunil Kalkal...S.Verma... et. al. **J.Phys.:Conf.Ser. 312, 082027 (2011)** Online ISSN: 1742-6596 Print ISSN: 1742-6588*
4. *Isomeric States in  $^{208}\text{Hg}$  and  $^{209}\text{Tl}$  Populated in Fragmentation of  $^{238}\text{U}$   $^{209}\text{Tl}$  by N. Al-Dahan ...S.Verma... et. al. **Acta Phys.Pol. B40, 871 (2009)***
5. *Angular Momentum Population in Fragmentation Reactions by A.M. Denis Bacelar...S.Verma... et. al. **Acta Phys. Pol. B40, 889 (2009)***
6.  *$\beta$ -Delayed  $g$ -Ray spectroscopy of Heavy Neutron Rich Nuclei "South" of Lead by A.I. Morales...S.Verma... et. al. **Acta Phys. Pol. B40, 867 (2009)***

*Research papers Published in Conferences/Seminar other than Refereed/Peer Reviewed Conferences*

**Publications in National symposiums**

1. Statistical model calculations for nuclear fission processes, Neeraj Kumar...**Shashi Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys. B93, Vol61, page 528 (2016)*
2. Transfer reaction measurements for  $^{28}\text{Si} + ^{92,96}\text{Zr}$  systems, Khushboo... **S Verma ...** et. al. *Proc. DAE-BRNS symp. on Nucl. Phys B71 Vol 61, page 484, (2016)*
3. Negative-parity high-spin band structure in  $^{135}\text{Pr}$ , Ritika Garg ... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys. Vol 61, page 15, (2016)*
4. *High Spin negative parity states in  $^{135}\text{Pr}$ , Ritika Garg ... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys. A21 96 (2015)**
5. Fabrication of enriched  $^{176}\text{Yb}$  self-supporting targets for the study of fission dynamics in mass region  $A \sim 200$ , Neeraj Kumar...**Shashi Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys. G54 1010 (2015)*
6. *Investigation of dissipation in fission of  $^{220,222,224}\text{Th}$  isotopes formed in  $^{16}\text{O}+^{204,206,208}\text{Pb}$  fusion reaction, Savi Goyal ... **S Verma ...** et. al. *Proc. DAE-BRNS symp. on Nucl. Phys B142 592 (2014).**
7. *Exploration of reaction mechanism at deep sub-barrier region for  $^{28}\text{Si} + ^{96}\text{Zr}$  system, Khushboo... **S Verma ...** et. al. *Proc. DAE-BRNS symp. on Nucl. Phys B144 596 (2014).**
8. *Probing dissipation effects via evaporation residue excitation function for the the*

- $^{16,18}\text{O} + ^{198}\text{Pt}$  Reactions, Rohit Sandal ... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B110 526 (2013)
9. *High Spin States in  $^{87}\text{Sr}$  and their discription using shell model calculations*, Suresh Kumar... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* A21 224 (2012)
  10. *Evaporation residue excitation function measurement for the  $^{16,18}\text{O} + ^{198}\text{Pt}$  reactions* Rohit Sandal ... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B72 532 (2012)
  11. *Study of magnetic rotation in mass  $A = 135$  region* Ritika Garg ... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* A15 218 (2011)
  12. *Polarization asymmetry measurements for the yrast band of  $^{85}\text{Rb}$*  S Kumar... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* A67 322 (2011)
  13. *A VME based data acqisition system for pulse shape recording of gamma-ray detector* Davinder Siwal ... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* G10 1050 (2011)
  14. *Negative Parity States in  $^{86}\text{Sr}$*  S. Kumar... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* A67 322 (2011)
  15. *Effects of shell closure of target on neutron multiplicity for the  $^{28}\text{Si} + ^{204,206,208}\text{Pb}$*  Savi Goyal ... **S Verma** ... et. al. *Proceedings of DAE-BRNS symposium on Nuclear Physics* B56 606 (2011).
  16. *In beam spectroscopy of negative parity states in  $^{135}\text{Pr}$*  Ritika Garg ... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B55 64 (2010).
  17. *One and two proton transfer reactions for  $^{28}\text{Si} + ^{90,94}\text{Zr}$  systems at much above the barrier energy* Sunil Kalkal... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B55 226 (2010).
  18. *Role of neutrons and protons in MR bands in  $^{137}\text{Nd}$  and  $^{137}\text{Pr}$  nuclei* Deepika Choudhury... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B55 66 (2010).
  19. *Investigation of fission reaction dynamics and neutron multiplicity in the mass region  $\sim 200$* , Savi Goyal... **S.Verma**... et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B55 314 (2010).

20. Measurement of transfer reaction cross sections for  $^{28}\text{Si} + ^{90,94}\text{Zr}$  in sub-barrier and near barrier region, Sunil Kalkal... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B54 272 (2009).
21. Measurement of fusion excitation functions around the Coulomb barrier for  $^{28}\text{Si} + ^{90,94}\text{Zr}$  systems, Sunil Kalkal... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* B54 274 (2009).
22. Fusion and angular distribution measurements for  $^{40}\text{Ca} + ^{70}\text{Zn}$  around Coulomb barrier, Ranjeet... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 52, 329 (2007).
23. Elastic scattering and fusion measurements for  $^7\text{Li} + ^9\text{Be}$  system, **Shashi Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 51, 467 (2006).
24. Deep Optical potential approach to the analysis of  $^{14}\text{C} + ^{12}\text{C}$  elastic scattering **Shashi Verma**, Raghuvir Singh, Florent Hass *Proc. DAE-BRNS symp. On Nucl. Phys.* 50C, 372 (2005)
25. Elastic scattering and fusion cross sections for  $^7\text{Be}$ ,  $^7\text{Li} + ^{27}\text{Al}$  system K. Kalita... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 50C, 370 (2005)
26. Fission Hindrance studies in  $^{200}\text{Pb}$  P.D. Shidling... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 50C, 340 (2005)
27. Elastic scattering measurement for  $^7\text{Be} + ^9\text{Be}$  systems **S. Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 47B, 340 (2004)
28. Fusion cross sections for  $^7\text{Be} + ^{27}\text{Al}$  system from quasi elastic scattering K. Kalita... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 47B, 306 (2004)
29. Fission Hindrance studies: Evaporation residues and gamma measurement P.D. Shidling... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 47B, 270 (2004)
30. Development of large area telescopic detector system for transfer reaction angular distribution measurements K. Kalita... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 47B, 554 (2004)
31. Simultaneous measurement of elastic, transfer and fusion cross sections for  $^7\text{Be} + ^{27}\text{Al}$  system K. Kalita... **S.Verma...** et. al. *Proc. DAE-BRNS symp. On Nucl. Phys.* 46B, 316

(2003)
32. <i>Annular Detector setup for RIB experiments at NSC Akhil Jhingan... S.Verma... et. al. Proc. DAE-BRNS symp. On Nucl. Phys. 45B, 416 (2002)</i>
33. <i>In Vacuum target transfer system for <math>^7\text{Be} + ^7\text{Li}</math> scattering experiment S. Barua... S.Verma... et. al. Proc. DAE-BRNS symp. On Nucl. Phys. 46B, 468 (2002)</i>
Conference Organization/ Presentations (in the last three years)
Total Publication Profile optional
Year 2003-2017
Reviewed Journals ~28, Conferences and symposia ~33+6, Invited talks and Seminars ~ 10
Research Projects (Major Grants/Research Collaboration)
Awards and Distinctions
GATE – 2001 : Qualified Graduate Aptitude Test in Engineering (GATE-2001) in Physics held on February 11, 2001 conducted by Indian Institute of Technology, Kanpur, India. JRF-NET-2000 : Qualified joint CSIR-UGC Junior Research Fellowship (JRF) and Eligibility for Lectureship- National Eligibility Test (NET) held on 31.12.2000 in Physical Sciences conducted by CSIR-UGC, India.
Association With Professional Bodies
Other Activities
<b>Invited Talks and Seminars</b> Seminar on “Elastic scattering measurements for $^7\text{Be}$ , $^7\text{Li} + ^9\text{Be}$ system and fusion measurement for $^7\text{Li} + ^9\text{Be}$ system using low energy Radioactive Ion Beam facility” at various European Labs (2006):  * Laboratori Nazionali del Sud (LNS), Catania, Italy.  * Laboratori Nazionali del Leganro (LNL), Padova, Italy.  * Gesellschaft fur Schwerionenforschung mbH (GSI), Darmstadt, Germany.  * Institut Pluridisciplinaire Hubert Curien (IPHC), Strasbourg, France.  * Grand Accelérateur National d Ions Lourds (GANIL), CAEN, France

Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC or PDF file to be attached as a link on your faculty page.