NIRUPAMA SENSHARMA

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EDUCATION

University of Notre Dame — Notre Dame, IN
Ph.D. Physics — *Expected* 2021
GPA: – 3.73/4.00

University of Notre Dame — Notre Dame, IN
M.S. Physics — 2018

University of Delhi — Delhi, India
M.Tech. Nuclear Science and Technology — 2015

University of Delhi, Hindu College — Delhi, India
B.Sc., Physics (Honors) — 2012

RESEARCH EXPERIENCE

University of Notre Dame, Notre Dame, IN — 2015-Present
Argonne National Laboratory (ANL), IL

- Conducted various experiments using the Gammasphere facility (an array of 110 Germanium detectors) at ANL.
- Investigated the exotic phenomena of wobbling and chirality in triaxial nuclei in different mass regions of the nuclear chart.
- Worked extensively on C/C++ based codes for data reduction and performed in-depth analysis to obtain information on triaxial nuclei through gamma spectroscopic techniques.
- Presently working on a project titled '*Exploring exotic rotations in triaxial nuclei*'.

WORK EXPERIENCE

***Master's Thesis Student**, Nuclear Physics Laboratory,* — Dec 2014 - June 2015
Variable Energy Cyclotron Center, Kolkata, India

- Developed and standardized an angular correlation setup using Lanthanum Bromide detectors.
- Measured the Quadrupole Moments of the excited states of nuclei in the Z=64 region using Perturbed Angular Correlation Techniques

***Project Student**, Nuclear Physics Laboratory,* Jun 2014– Aug 2014
Bhabha Atomic Research Center (BARC), Mumbai, India

- Assembled a hybrid detector including a CsI(Tl) scintillator coupled to a PIN diode followed by a silicon pad detector.
- Tested the detector for alpha particles and fission fragments.

***Project Student**, Nuclear Physics Laboratory,* Dec 2013 - Jan 2014
Variable Energy Cyclotron Center, Kolkata, India

- Worked with the Gas Electron Multiplier (GEM) detector.
- Performed experiments to measure the energy resolution and an optimum working voltage of a triple-GEM detector using a Fe-55 X-ray source.

***Project Student**, Reactor Design Group* Dec 2012 – Jan 2013
Indira Gandhi Center for Atomic Research (IGCAR), Tamil Nadu, India

- Worked on "Minor Actinide Incineration in Metal Fast Breeder Reactors".
- Used ORIGEN code to calculate the actual percentage of minor actinides that can be burnt in a 1000MWe Metal Fast Breeder Reactor

***Project Student**, Department of Nuclear Physics* Jun 2012 – Aug 2012
Atomic Minerals Directorate for Exploration and Research, New Delhi, India

- Worked on the "Basic Gamma Ray Spectrometry of Rocks and Instruments used for Rock Analysis".
- Performed detailed analysis for rock samples collected from various regions in India to calculate their equivalent Uranium, Thorium and Potassium concentration.

TEACHING EXPERIENCE

University of Notre Dame, Notre Dame, IN Aug 2015 – May 2018
Teaching Assistant

- Conducted help sessions for Physics Majors.
- Helped in homework and exam grading for Physics Majors as well as Pre-Meds.
- Assisted with experiments in Physics Laboratories for Pre-Med students.
- Provided one-on-one office hours to help undergraduate students with their course material.

PUBLICATIONS

- **N. Sensharma**, U. Garg, S. Zhu, A. D. Ayangeakaa, S. Frauendorf, W. Li, G. H. Bhat, J. A. Sheikh, M. P. Carpenter, Q. B. Chen, et al., Two – phonon wobbling in ^{135}Pr. Phys. Lett. B 792, 170 (2019).
- **N. Sensharma**, U. Garg, D. P. Burdette, J. L. Cozzi, S. Frauendorf, K. B. Howard, Q. B. Chen, S. Zhu, et al., Longitudinal wobbling motion in ^{187}Au. arXiv:1906.04408 [nucl-ex].
- Y. K. Gupta, B. K. Nayak, U. Garg, **N. Sensharma**, R. Gandhi, D. C. Biswas, M. Şenyiğit, K. B. Howard, et al., Determination of hexadecapole (β_4) deformation of the light-mass nucleus ^{24}Mg using quasi-elastic measurement. arXiv:1811.12756 [nucl-ex].

OUTREACH

Outreach member with ND Energy 2018 - Present

- Led outreach event and organized nuclear physics demonstrations for elementary and middle school students from Hamilton Traditional School in South Bend.

Physics of Atomic Nuclei (PAN) presenter June 2018

- Only graduate student to be invited for presenting to 20 phenominal high school students selected from all over the US to do a summer project in Nuclear Physics.

Social Responsibilities of Researchers (SRR) fellow 2017 - 2018

- Developed a website www.thebetterenergy.net to introduce general public to the basic applications of Nuclear Energy.
- The website is used for educational/informative purposes by various high school students as well as by Outreach programs at the University of Notre Dame.

STEMentor with Association of Women in Science (AWIS) 2016 - Present

- Mentored female undergraduate students studying in STEM fields at the University of Notre Dame.
- Helped mentees get involved in research on campus.

Outreach member with Joint Institute of Nuclear Astrophysics (JINA) 2016 - Present

- Have volunteered as a presenter at science fairs organized in local South Bend community for middle school students.
- Have volunteered for judging in science fairs at the Northern Indiana Regional Science fair organized every year in South Bend, Indiana, USA.

AWARDS & SCHOLARSHIPS

Conference Presentation Grant 2018 - 2019

- This award is given by the Graduate Student Union of the University of Notre Dame for graduate students to provide funds for presenting original research at conferences and workshops pertaining to the student's particular field of research. Have received this award three times, amounting to $1000 in July, 2018, August, 2018 and September, 2019 to participate and present in National conferences.

Graduate School Professional Development Award ***2***018

- Received Professional Development award from the Graduate School at the University of Notre Dame in the form of $400 for presenting my research at the joint meeting of the Nuclear Physics Divisions of the American Physical Society and the Physical Society of Japan held in October 2018.

LASER fellow 2018

- Selected for the inaugural year of the professional development program, Leadership Advanced Socially Engaged Research (LASER) 2018-19 at the University of Notre Dame.

- Received $1000 as stipend and three-course credits as a part of the program.
- Engaged in year-long training in ethical research and leadership motivated tasks.

SRR fellow 2017

- Selected for the third cohort of the NSF-sponsored training program Social Responsibilities of Researchers (SRR) in the Reilly Center at the University of Notre Dame.
- Received $1400 as stipend and three-course credits as a part of the program.
- Engaged in rigorous year-long training in ethical and socially engaged research.

Scholarship holder from CBSE, New Delhi, India 2010,11,12

- Received scholarship from the Central Board of Secondary Education (CBSE), New Delhi, India under the Central Sector Scheme for Scholarship for College and University students for three consecutive years.
- Received a total of Rs. 35,000 equivalent to ~ $800 according to exchange rate of 2010.

PRESENTATIONS

Fifth Joint Meeting of the Nuclear Physics Divisions of the APS and the JPS 2018
Hilton Waikoloa Village, Hawaii Island, USA
Oral Presentation "Wobbling motion in A~190 region"

17th Nuclear Structure Conference (NS2018), National Superconducting Cyclotron 2018
Lab, East Lansing, MI, USA
Poster Presentation "Two phonon wobbling in ^{135}Pr"

16th Exotic Beam Summer School (EBSS2017), Argonne National Lab, IL, USA 2017
Poster Presentation "Two phonon wobbling in ^{135}Pr"

60th Department of Atomic Energy (DAE) Nuclear Physics Symposium, India 2015
Poster Presentation "Angular Correlation Measurements around Z=64"

59th Department of Atomic Energy (DAE) Nuclear Physics Symposium, India 2014
Poster Presentation "*Energy Resolution of a triple-GEM detector using 55Fe X-ray Source"*

SKILLS

Language Proficiency: Proficient in English, Hindi and Bengali.

Computer Skills

- C, C++, Python, ROOT with 10,000+ lines.
- HTML, JavaScript with 1,000+ lines.
- LaTeX with 10,000+ lines.
- Mathematica