CURRICULUM VITAE

Vivek Kumar Nautiyal, Ph.D.

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EDUCATION AND RESEARCH EXPERIENCE

2014 – 2020 **Ph.D., TheoreticalNuclear Physics**
Babasaheb Bhimrao Ambedkar University, Lucknow, India.
Thesis: "Implications of Neutrinoless Double Beta Decay"
Advisor: Dr. Ramesh Chandra

2012 – 2014 **M.Tech., Applied Optics**
Indian Institute of Technology Delhi (IITD), New Delhi, India
Thesis: "Investigation of Fresnel Incoherent Correlation Holography (FINCH)"
Advisor: Prof. Joby Joseph

2010 – 2012 **M.Sc., Applied Physics**
Babasaheb Bhimrao Ambedkar University, Lucknow, India.
Thesis: "Hierarchies in neutrino mass spectrum through the study of neutrino oscillations"
Advisor: Dr. Ramesh Chandra

2007 – 2010 **B.Sc., Science**
University of Lucknow, Lucknow, India.

EXPERTISE AND COMPUTATIONAL SKILLS

- **Simulation**: Numerical simulations, Programming, Optical Workshop.
- **Material synthesis**: Pollyaniline (PANI, Conductive Polymer).
- **Tools**: Scientific Workplace and LYX.
- **Programming Languages**:PYTHON, MATLAB, MATHEMATICA, C and FORTRAN for Scientificapplications.
- **Proficient in**: Microsoft Office (Word, Excel, PowerPoint)
- **Operating Systems**: Windows and little bit aware of Linux.

COURSES

- Mathematical Physics,Quantum Mechanics I and II, Nuclear and Particle Physics, Electronics, Statistical Physics, Electromagnetic Theory, Condense Matter Physics, Material Science, Environmental Physics, Atomic and Molecular Physics.
- Theory appl. of Holography, Fourier Optics Optical Processing, Fiber Optics, Optical Instrument Metrology, Photometry, Statistical and Quantum Optics, Optics Lasers, Optical System Design, Numerical and Computational Methods.
- Data Structure using C, C, Visual Basic, Database Management System.

WORKSHOPS AND SCHOOLS

- 2nd DAE-BRNS workshop on Neutrinoless Double Beta Decay (NDBD-2016)' during October 17-21, 2016 at IIT Ropar, Rupnagar (Punjab).
- 2nd DAE-BRNS workshop on 'Evaluation of Nuclear Structure and Decay Data' from February 29 - March 04, 2016, at HBCSE, TIFR Mumbai.
- Winter School on 'Beyond the Standard Model Physics' held at Banaras Hindu University, Varanasi from Jan 24-Feb 14, 2016.
- DST-SERC School on 'Nuclear Structure on High Angular Momentum and Isospin' held at HBCSE campus, Tata Institute of Fundamental Research, Mumbai during October 5-24, 2014.
- Winter School on 'Astroparticle Physics' held at Cosmic Ray Laboratory (Tata Institute of Fundamental Research), Ooty during December 20-28,2012.

ACADEMIC ACHIEVEMENTS

- I gotselected bythe **National Changhua of Education (NCUE)** via the **Taiwan Experience Exchange Program (TEEP)** which cooperated with the **Ministry of Education (MOE)** under the supervision of Prof. Wei-Chia Su in 2020.
- **Honor Code Certificate**: Successfully completed and received a passing grade inANU-ASTRO1x: Greatest Unsolved Mysteries of the Universe, a course of study offered by ANUx, an online learning initiative of the **Australian National University** through edX in 2012.
- Qualify for the National Eligibility Test (NET) Exam in June 2012 conducted by the **Council of Scientific & Industrial Research (CSIR)** and **University Grant Commission (UGC)**, India.
- Qualify for the **Graduate Aptitude Test in Engineering (GATE**) Exam in 2012 and 2016 conducted by the Indian Institute of Technology, India.
- Cleared the **Combined Geo-Scientists and Geologist** written exam in 2015 conducted by **Union Public Service Commission (UPSC),** India.
- Gave Interviews for the post of Scientist at**Bhabha Atomic Research Centre (BARC)** and **Indian Space Research Organization (ISRO),** respectively.
- Selected for the post of research scholar in the **Institute of Plasma Research (IPR)** and **Aryabhatta Research Institute of Observational Sciences (ARIES)** in 2012.

PUBLICATIONS

Book (Published)

- BipinSinghKoranga, Sanjay Kumar Padaliya, **Vivek Kumar Nautiyal**, SPECIAL FUNCTIONS AND THEIRAPPLICATIONS, **River Publisher(Denmark)**, (2021). ISBN – 9788770226264 | e-ISBN - 9788770226257

Articles in Refereed Journals (Published)

- **Vivek Kumar Nautiyal**, AtulChoudhary, Bipin Singh Koranga, and Agam Kumar Jha, The study of angular momentum on the fusion of 28Si14+28Si14, using SEDF in semiclassical extended Thomas-Fermi approach, **Nuclear Physics A**, 122672 (2023). https://doi.org/10.1016/j.nuclphysa.2023.122672
- **Vivek Kumar Nautiyal**, Vishal Gupta, Ratindra Gautam, Pranav Upadhyay, Comparative investigation of 1D photonic crystal of magneto-optical and electro-optical materials with a nanocomposite of three/four-phase mixtures, ***Optical and Quantum Electronics*** **96**, 025504 (2023).

https://doi.org/10.1007/s11082-023-04824-7

- **V. K. Nautiyal**, R. Gautam, N. Das, R. Chandra, P. K. Rath, P. K. Raina, Occupation numbers and nuclear transition matrix elements for 0νβ−β− decay within a mechanism involving neutrino mass, ***European Physical Journal A*** 58, 28 (2022). https://doi.org/10.1140/epja/s10050-022-00677-y
- P. K. Rath, B. Shukla, K. Chaturvedi, **V. K. Nautiyal**, R. Chandra and P. K. Raina, Nuclear transition matrix elements for neutrinoless double-β decay within Rp-violating squark-neutrino mechanism, ***Int. J. Mod. Phys. E*.29**, 8, 2050066 (2020). https://doi.org/10.1142/S0218301320500664
- **Vivek Kumar Nautiyal**, Bipin Singh Koranga, Effect on Jarlskog Determinant above the GUT scale within Four Flavor Neutrino framework,***Int. J.Theor. Phys.* 60**, 3548-3565(2021).http://dx.doi.org/10.1007/s10773-021-04916-8
- Bipin Singh Koranga, **Vivek Kumar Nautiyal**, Effective Neutrino Masses from Four Flavor Neutrino Mixing Matrix, ***Int. J.Theor. Phys.*60**, 781-792(2021). https://doi.org/10.1007/s10773-020-04683-y
- Bipin Singh Koranga, **Vivek Kumar Nautiyal**, CPT Violation in Four Flavor Neutrino Framework from Planck ScaleEffects, ***Int. J.Theor. Phys.*60**, 976-981(2021). https://doi.org/10.1007/s10773-021-04720-4
- Bipin Singh Koranga, **Vivek Kumar Nautiyal**, A. K. Jha, M. Narayan,Quantum Gravity Effects on Oscillation Parameters in a Four Flavor Framework, ***Int. J.Theor. Phys.*60**, 1920-1932 (2021). https://doi.org/10.1007/s10773-021-04811-2
- **Vivek Kumar Nautiyal**, Bipin Singh Koranga, Sanjay Kumar Padaliya, Neelam Das and Ashish Shrivastava, Jarlskog Determinant in Four Flavor Neutrino Oscillation Framework, Journal of Graphic Era University 10_2, 83–94 (2022). doi: 10.13052/jgeu0975-1416.1022
- Hiba Khan, Santosh Kumar Singh, **Vivek Kumar Nautiyal**, Constraints on Neutrino Mass Matrix with no Majorana Phases, Journal of Graphic Era University 10_2, 133-154 (2022). doi: 10.13052/jgeu0975-1416.1025
- Bipin Singh Koranga,**Vivek Kumar Nautiyal**, Mohan Narayan, Quantum Gravity Correction to Co-bimaximal Neutrino Mixings, ***Boson Journal of Modern Physics***, 7(1), 24-35 (2020).
- **Vivek Kumar Nautiyal**, Pawan Singh, Pranav Upadhyay, Khem B Thapa, Theoretical investigation of optical properties and Faraday rotation of one-dimensional periodic structure of magneto-optical material with a defect electro-optical material for supported the Tamm plasmon-polaritons, ***Indian Journal of Physics 96,***3941–3950 (2022).
- Pawan Singh, **Vivek Kumar Nautiyal**, Ram Janma, Khem B Thapa, Theoretical investigation of enhanced sensing property in 1D TiO2/SiO2 periodic layers containing a defect layer of the nanocomposite with different radii of silver nanoparticles in the host liquid crystal, ***PhysicaScripta*95**, 6, 065507 (2020). https://doi.org/10.1088/1402-4896/ab82c5
- KaushlendraAgrahari, **Vivek Kumar Nautiyal**, TriptiVimal, Shivani Pandey, Sandeep Kumar, Rajiv Manohar, Modification in different physical parameters of orthoconicantiferroelectric liquid crystal mixture via the dispersion of hexanethiol capped silver nanoparticles, ***Journal of Molecular Liquids 332***, 115840 (2021). https://doi.org/10.1016/j.molliq.2021.115840

- Pawan Singh, **Vivek Kumar Nautiyal**, Neeraj Singh, Khem B Thapa, Study of the effective surface Plasmon in a nano-composite of silver nanoparticles with a host ZrO2 in one-dimensional ternary periodic structure for solar cell application, ***PhysicaScripta*96**, 025504 (2021).
  https://doi.org/10.1088/1402-4896/abd200

CONFERENCE PRESENTATIONS

Oral Presentations

- **Vivek Kumar Nautiyal**, Neutrinoless double beta decay within R-parity violating supersymmetric models. Online oral presentation at VI International School for Young Scientists: Magnetic Resonance and Magnetic Phenomena in Chemical and Biological Physics in Roshchino, ***St. Petersburg (Leningrad) region, Russia*** on September 5-10, 2020.

Poster Presentations

- **Vivek Kumar Nautiyal** and Joby Joseph, Investigation of Fresnel Incoherent Correlation Holography, Poster presentation at IIT Delhi, April 2014.
- R. Chandra, **V. K. Nautiyal**, R. Gautam, K. Chaturvedi, P. K. Rath and P. K. Raina, Study of squark-neutrino mechanism of neutrinoless double beta decay in R-parity violating supersymmetric models, Poster presentation at *60th DAE BRNS Symposium on Nuclear Physics, India, December 7-11, 2015.*
- **Vivek Kumar Nautiyal**, YashKaur Singh, R. Chandra, P. K. Rath and P. K. Raina, Majoron accompanied Neutrinoless double beta decay, Poster presentation at *6th IJAA-JSPS International conference on 'Contemporary Advances of Science and Technology (IC-CAST-2015)' held at Banaras Hindu University on August 7-9,2015.*
- **Vivek Kumar Nautiyal**and R. Chandra, SUSY accompanied neutrinoless double beta decay within PHFB model,Poster presentation at *3rd Lucknow Science Congress and National conference on 'Science for Society: An Interdisciplinary Approach held at Babasaheb Bhimrao Ambedkar University, Lucknow, India on Oct. 31- Nov.2, 2015.*