



Name: Dr. Surender Verma

Designation: Assistant Professor

Contact: School of Physical and Material Sciences
Department of Physics and Astronomical Sciences
Temporary Academic Block (TAB), Shahpur,
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Academic Qualification: Ph. D.

Specialization and Research Interests:

- Neutrino Mass Model Building and their low energy phenomenology
- Dark Matter and its Collider Complementarity
- CP Violation in Leptonic sector and Leptogenesis
- Grand Unified Theories (GUTs)
- Aspects of Modular symmetries and canonical seesaw models

Research Projects Completed: 01, "Theoretical and Phenomenological Aspects of Lepton Mass Matrices in light of the Neutrino Oscillation Data", Funding agency: UGC-BSR, April 01, 2014 to March 31, 2016, Sanction No. and Date of award: No. F. 20-2(30)/2013(BSR), Dated 14.02.2014.

Research Fellowships:

1. Junior Research Fellow (JRF) under research project entitled "Constraints on Solar Neutrino and Astrophysical Parameters from Solar Neutrino Data" funded by Department of Atomic Energy (DAE), Board of Research in Nuclear Sciences (BRNS), Govt. of India during 2004-2006.
2. Senior Research Fellow (SRF) under research project entitled "Constraints on Solar Neutrino and Astrophysical Parameters from Solar Neutrino Data" funded by Department of Atomic Energy (DAE), Board of Research in Nuclear Sciences (BRNS), Govt. of India during 2006-2007.
3. Senior Research Fellowship (SRF) from Council of Scientific and Industrial Research (CSIR)-University Grants Commission (UGC) NET", INDIA, 2008-2009.
4. Awarded Dr. D. S. Kothari Post Doctoral Fellowship, 2012.

PhD Supervised/Supervising: 02(PhD Awarded), 02(Supervising)

S. No.	Name of the Students and Roll No.	Title of the Thesis	Year of Award	Name of the Institute
1	Dr. Shankita Bhardwaj CUHP13RDPHY03	PHENOMENOLOGICAL ASPECTS OF NEUTRINO MASSES, MIXING AND LEPTONIC CP VIOLATION	2020	Central University of Himachal Pradesh
2	Dr. Gazal Sharma	INVESTIGATING NEUTRINO PARAMETERS,	2021	Central University of Himachal Pradesh

	CUHP13RDPHY02	STERILE NEUTRINO AND DARK MATTER		
3	Monal Kashav CUHP17RDPHY06	SOME ASPECTS OF NEUTRINO MASS MODELS AND ASSOCIATED PHENOMENOLOGY	Pursuing	Central University of Himachal Pradesh
4	Labh Singh	NOT DECIDED YET	Pursuing	Central University of Himachal Pradesh

Research Publications:

Remark: Research Publications are available online at:

<http://inspirehep.net/search?ln=en&p=surender+verma> and

<https://orcid.org/0000-0002-5671-5369>

Research Publications

1. Ankush, Monal Kashav, **Surender Verma** and B C Chauhan, “Scotogenesis in Hybrid Textures of Neutrino Mass Matrix and Neutrinoless Double Beta Decay”, **Published in: Phys. Lett. B 824, 136796 (2022).**
e-Print: 2109.14211 [hep-ph].
Impact Factor-4.771
2. Monal Kashav and **Surender Verma**, “Broken Scaling Neutrino Mass Matrix and Leptogenesis based on A₄ Modular invariance”
Published in: JHEP 09 (2021) 100.
e-Print: 2103.07207 [hep-ph].
Impact Factor-5.871 Citations-07
3. Rishu Verma, Monal Kashav, **Surender Verma** and B C Chauhan, “Scalar Dark Matter in an Inverse Seesaw Model with A₄ Discrete Flavor Symmetry”
Published in: Progress of Theoretical and Experimental Physics (PTEP), (2021), <https://doi.org/10.1093/ptep/ptep130> (final accepted version to appear).
e-Print: 2102.03074 [hep-ph].
Impact Factor-2.572 Citations-02
4. Rishu Verma, Monal Kashav, Ankush, Gazal Sharma, **Surender Verma** and B C Chauhan, “Texture One Zero Model Based on A₄ Flavor Symmetry and its Implications to Neutrinoless Double Beta Decay”
Published in: J. Nucl. Phys. Mat. Sci. Rad. A. Vol. 9, No. 1 (2021), pp. 67–71.
5. Gazal Sharma, B.C. Chauhan and **Surender Verma**, “CP Phase Analysis Using Quark-Lepton Complementarity Model in 3+1 Scenario”
DOI: 10.1007/978-981-33-4408-2_160
Published in: Springer Proc. Phys. 261 (2021), 1087-1092.

6. **Surender Verma**, Shankita Bhardwaj and Monal Kashav, "Majorana Unitarity Triangle in Two-Texture Zero Neutrino Mass Model and Associated Phenomenology"
DOI: 10.1007/978-981-33-4408-2_144
Published in: Springer Proc. Phys. 261 (2021), 995-1000.
7. **Surender Verma** and Shankita Bhardwaj, "Implications of Non-unitarity on θ_{23} , Neutrino Mass Hierarchy and CP-Violation Discovery Reach in Neutrino Oscillation Experiments"
DOI: 10.1007/978-981-33-4408-2_145
Published in: Springer Proc. Phys. 261 (2021), 1001-1005.
8. **Surender Verma** and Monal Kashav, "Neutrino Mass Matrix with one-zero in Type-I+II seesaw model with A4 Symmetry".
Published in: Frontiers in Basic Physics and Applications, ISBN 978-81-933014-8-7.
9. **Surender Verma** and Monal Kashav, "Magic Neutrino mass model with broken μ - τ symmetry and Leptogenesis"
Published in: J. Phys. G 47, 085003 (2020).
Impact Factor-3.534 Citations-05
10. **Surender Verma** and Monal Kashav, "Ramifications of Texture one-zero neutrino mass model in coherence with the latest Neutrino Data"
Published in: Mod. Phys. Lett. A 35, 2050165 (2020).
Impact Factor-1.367 Citations-03
11. **Surender Verma**, Monal Kashav and Shankita Bhardwaj, "Highly predictive and testable A_4 flavor model within type-I and II seesaw framework and associated phenomenology"
Published in: Nucl. Phys. B 946, 114704 (2019).
Impact Factor-3.185 Citations-03
12. **Surender Verma** and Shankita Bhardwaj, "Non-standard interactions and prospects for studying standard parameter degeneracies in DUNE and T2HKK"
Published in: Advances in High Energy Physics, 8464535 (2019).
arXiv:1808.04263[hep-ph].
Impact Factor-1.953 Citations-10
13. **Surender Verma**, Shankita Bhardwaj, B.C. Chauhan, Gazal Sharma, "Probing CP Violation in Neutrino Oscillation Experiments and Leptonic Unitarity Quadrangle", 10.1007/978-3-319-73171-1_58.
Published in: Springer Proc. Phys. 203 (2018) 257-261.
14. Govind Singh, Ashish Sharma, Gazal Sharma, Shankita Bhardwaj, **Surender Verma**, B.C. Chauhan, "Bounds on Sterile Neutrino Component in the Solar Neutrino Flux", 10.1007/978-3-319-73171-1_170.
Published in: Springer Proc. Phys. 203 (2018) 713-716.

15. Ashish Sharma, Govind Singh, Gazal Sharma, Shankita Bhardwaj, **Surender Verma**, B.C. Chauhan, "Search for Sterile Neutrino Signal in the ${}^7\text{Be}$ Solar Neutrino Measurement with KamLAND", 10.1007/978-3-319-73171-1_12. **Published in: Springer Proc. Phys. 203 (2018) 59-64.**
16. **Surender Verma** and Shankita Bhardwaj, "Connecting Majorana phases to the geometric parameters of the Majorana unitarity triangle in a neutrino mass matrix model",
Published in: Phys. Rev. D 97, 095022 (2018). arXiv:1803.04162[hep-ph].
Impact Factor-4.368 Citations-02
17. Gazal Sharma, Shankita Bhardwaj, B.C. Chauhan, **Surender Verma**, "Quark-lepton Complementarity model based predictions for $\theta_{23}^{\text{PMNS}}$ with neutrino mass hierarchy", arXiv:1711.08796 [hep-ph]. 10.1007/978-3-319-73171-1_57.
Published in: Springer Proc. Phys. 203 (2018) 251-256.
Citations-04
18. **Surender Verma** and Shankita Bhardwaj, "Probing Non-unitary CP Violation effects in Neutrino Oscillation Experiments", arXiv:1609.06412 [hep-ph]. 10.1007/s12648-018-1211-7.
Published in: Indian J. Phys. 92 (2018) no.9, 1161-1167.
Impact Factor-1.242 Citations-08
19. **Surender Verma** and Shankita Bhardwaj "Prospects for Reconstruction of Leptonic Unitarity Quadrangle and Neutrino Oscillation Experiments".
Published in: Nucl. Phys. B 907, (2016) 249-257.
Impact Factor-3.185 Citations-02
20. **Surender Verma**, "Vanishing Effective Majorana Neutrino Mass and Light Sterile Neutrino"
Published in: Mod. Phys. Lett. A, 31 (2016) 06, 1650040.
Impact Factor-1.367 Citations-01
21. **Surender Verma** and Shankita Bhardwaj, "Non-vanishing θ_{13} and CP-Violation in Inverse Neutrino Mass Matrix".
Published in: Springer Proc. Phys. 174, 383-387 (2016).
22. **Surender Verma**, "Theoretical and Phenomenological Status of Neutrino Physics: A Review".
Published in: Advances in High Energy Physics, 2015, open source article ID 385968.
Impact Factor-1.953 Citations-09
23. **Surender Verma**, "Maximal CP-Violation in Neutrino Mass Matrix in light of the latest Daya Bay result on θ_{13} ",

Published in: Phys. Lett. B 714, 92-96 (2012);

arXiv:1206.6583 [hep-ph].

Impact Factor-4.162 Citations-09

24. Surender Verma, “Non-zero θ_{13} and CP -Violation in Inverse Neutrino Mass Matrix”.

Published in: Nucl. Phys. B 854, 340-349 (2012).

arXiv:1109.4228 [hep-ph].

Impact Factor-3.185 Citations-25

25. S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta and R. R. Gautam, “Four Zero Texture Fermion Mass Matrices in $SO(10)$ GUT”.

Published in: Euro. Phys. J. C 70, 1940 (2012).

Impact Factor-4.843 Citations-12

26. S. Dev and Surender Verma, “Leptogenesis in a Hybrid Texture Neutrino Mass Model”.

Published in: Mod. Phys. Lett. A 25, 2837-2848 (2010).

arXiv:1005.4521 [hep-ph].

Impact Factor-1.367 Citations-03

27. S. Dev, Surender Verma, Shivani Gupta and Radha Raman Gautam, “Neutrino Mass Matrices with a Texture Zero and a Vanishing Minor”.

Published in: Phys. Rev. D 81, 053010 (2010).

Impact Factor-4.368 Citations-45

28. S. Dev, Surender Verma and Shivani Gupta, “Phenomenological Analysis of Hybrid Textures of Neutrinos”.

Published in: Phys. Lett. B 687, 53-60 (2010).

arXiv: 0909.3182v3 [hep-ph].

Impact Factor-4.162 Citations-38

29. S. Dev, Sanjeev Kumar, Surender Verma and Shivani Gupta, “Phenomenological Implications of a Class of Lepton mass matrices”.

Published in: Mod. Phys. Lett. A 24, 2251-2261 (2009).

arXiv:0810.3080 [hep-ph].

Impact Factor-1.367 Citations-05

30. S. Dev, Sanjeev Kumar and Surender Verma, “ CP -odd weak basis invariants and Texture Zeros”.

Published in: Phys. Rev. D 79, 033011 (2009).

Impact Factor-4.368 Citations-13

31. S. Dev, Sanjeev Kumar, Surender Verma and Shivani Gupta, “ CP -Violation in Two Texture Zero Neutrino Mass Matrices”.

Published in: Phys. Lett. B 656, 79-82 (2007).

arXiv:0708.3321 [hep-ph].

Impact Factor-4.162 Citations-19

32.S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, “Phenomenology of two-texture zero neutrino mass matrices”.

Published in: Phys. Rev. D 76, 013002 (2007).

arXiv: hep-ph/0612102.

Impact Factor-4.368 Citations-105

33.S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, “Phenomenological implications of a class of neutrino mass matrices”.

Published in: Nucl. Phys. B 784, (2007) 103-117.

arXiv: hep-ph/0611313.

Impact Factor-3.185 Citations-65

34.S. Dev, Sanjeev Kumar and **Surender Verma**, “Model independent constraints on non-electronic flavors in the solar boron neutrino flux”.

Published in: Mod. Phys. Lett. A 21, 1761 (2006).

arXiv: hep-ph/ 0512178.

Impact Factor-1.367 Citations-03

Reviewer of:

1. Journal of Physics G: Nuclear and Particle Physics, Institute of Physics(IoP).
2. Physica Scripta, Institute of Physics(IoP).
3. Indian Journal of Physics, Springer.

Participation in Seminars/Conferences:

1. **International Conference** on Theoretical Aspects of Nuclear Physics organized by Central University of Himachal Pradesh from 15-20 February, 2021.
2. **XXIV DAE-BRNS Symposium** on High Energy Physics organized by NISER Jatni Odisha from December 14-18, 2020.
3. **Young Scientists’ Conference 2020**, organized by Ministry of Science and Technology, Ministry of Earth Sciences and Ministry of Health and Family Welfare, Govt. of India from 22-12-2020 to 24-12-2020.
4. **School** on Gravitation and Astroparticle Physics organized jointly by Inter University Centre for Astronomy and Astrophysics (IUCAA) and Central University of Himachal Pradesh at Central University of Himachal Pradesh from 29 February-12 March, **2016**.
5. **International Workshop**, “Unification and Cosmology after Higgs discovery”, Punjab University from 13-15 May, **2014**.

6. **International Workshop**, “From Majorana to LHC: Workshop on the Origin of Neutrino Mass”, Abdus Salam International Centre for Theoretical Physics (ICTP-Trieste, Italy) from 2-5 October, **2013**.
7. **International Workshop** on High Energy Physics and Phenomenology (WHEPP), Physical Research Laboratory (PRL), Ahmadabad, 2-12 January, **2010**.
8. **XVIII DAE-BRNS Symposium** on High Energy Physics, Banaras Hindu University, Banaras, 14-18 December, **2008**.
9. **International Workshop** on Theoretical High Energy Physics (IWTHEP), Indian Institute of Technology, Roorkee (INDIA), 15-20 March, **2007**.
10. **XVII DAE-BRNS Symposium** on High Energy Physics, Indian Institute of Technology, Kharagpur, 11-15 December, **2006**.

Participation in Refresher Course(s)/Faculty Development Programme and other(s):

1. **Refresher Course- Environmental Studies**, organized by UGC-HRDC, Aligarh Muslim University (AMU) from 03-09-2020 to 18-09-2020.
2. **Faculty Development Programme (FDP)** on Managing Online Classes and Co-creating MOOCS organized by TLC Ramanujan College University of Delhi under PMMMNMTT from 20-04-2020 to 06-05-2020.
3. **Faculty Development Programme (FDP) on R Programming** organized by IIT Bombay from May 25-29, 2020.
4. **Certificate Programme in Python for Beginners** conducted by E&ICT Academy, IIT Roorkee.
5. **Faculty Development Programme (FDP)** on e-content Development for Teachers organized by UGC-HRDC, Savitribai Phule Pune University (SPPU), under PMMMNMTT from 01-06-2020 to 05-06-2020.
6. **Faculty Development Programme (FDP)** on Open Source Tools for Research organized by TLC Ramanujan College University of Delhi under PMMMNMTT from 08-06-2020 to 14-06-2020.
7. **National Workshop on Technology and Instructional Reforms with reference to online teaching, learning and evaluation** organized by CALEM, Panjab University under PMMMNMTT from July 15-20, 2020.
8. **National Workshop on Curriculum Design and Development** organized by Central University of Punjab under PMMMNMTT from July 21-31, 2020.