# Detailed Profile

**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 Physics**
Neutrino Mass Models, Phenomenology of the lepton mass matrices, CP Violation in the lepton sector, Physics beyond the Standard Model of Particle Physics, Leptogenesis, Grand Unified Theories (GUTs)

**Research Projects Completed:** **01,** "Theoretical and Phenomenological Aspects of Lepton Mass Matrices in light of the Neutrino Oscillation Data"

**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 D. S. Kothari Post Doctoral Fellowship, 2012.

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

**Research Publications:**

**Remark:** The 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. Monal Kashav and **Surender Verma**, "Broken Scaling Neutrino Mass Matrix and Leptogenesis based on A_$4$ Modular invariance" **Submitted for publication**, e-Print: 2103.07207 [hep-ph]. *Citations-01*

2. Rishu Verma, Monal Kashav, **Surender Verma** and B C Chauhan, "Scalar Dark Matter in an Inverse Seesaw Model with A$_4$ Discrete Flavor Symmetry" **Submitted for publication**.
   e-Print: 2103.07207 [hep-ph]. *Citations-01*

3. 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

4. **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

5. **Surender Verma** and Shankita Bhardwaj, "**Implications of Non-unitarity on $\theta _{23}$, 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

6. **Surender Verma** and Monal Kashav, "Magic Neutrino mass model with broken $\mu-\tau$ symmetry and Leptogenesis" **J. Phys. G 47, 085003 (2020).**
   *Impact Factor-3.534* *Citations-05*

7. **Surender Verma** and Monal Kashav, "Ramifications of Texture one-zero neutrino mass model in coherence with the latest Neutrino Data" **Mod. Phys. Lett. A 35, 2050165 (2020).**
   *Impact Factor-1.367* *Citations-03*

8. **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" **Nucl. Phys. B 946, 114704 (2019).**
   *Impact Factor-3.185* *Citations-03*

9. **Surender Verma** and Shankita Bhardwaj, "Non-standard interactions and prospects for studying standard parameter degeneracies in DUNE and T2HKK" **Advances in High Energy Physics, 8464535 (2019).** arXiv:1808.04263[hep-ph].

*Impact Factor-1.953* *Citations-10*

10. **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. Springer Proc. Phys. 203 (2018) 257-261.

11. 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. Springer Proc. Phys. 203 (2018) 713-716.

12. Ashish Sharma, Govind Singh, Gazal Sharma, Shankita Bhardwaj, **Surender Verma**, B.C. Chauhan, "Search for Sterile Neutrino Signal in the $^{7}Be$ Solar Neutrino Measurement with KamLAND", 10.1007/978-3-319-73171-1_12. Springer Proc. Phys. 203 (2018) 59-64.

13. **Surender Verma** and Shankita Bhardwaj, "Connecting Majorana phases to the geometric parameters of the Majorana unitarity triangle in a neutrino mass matrix model", **Phys. Rev. D** 97, 095022 (2018). arXiv:1803.04162[hep-ph].
*Impact Factor-4.368* *Citations-02*

14. Gazal Sharma, Shankita Bhardwaj, B.C. Chauhan, **Surender Verma**, "Quark-lepton Complementarity model based predictions for $\theta_{23}^{PMNS}$ with neutrino mass hierarchy", arXiv:1711.08796 [hep-ph]. 10.1007/978-3-319-73171-1_57. Springer Proc. Phys. 203 (2018) 251-256.
*Citations-04*

15. **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. Indian J. Phys. 92 (2018) no.9, 1161-1167.
*Impact Factor-1.242* *Citations-08*

16. **Surender Verma** and Shankita Bhardwaj "Prospects for Reconstruction of Leptonic Unitarity Quadrangle and Neutrino Oscillation Experiments", **Nucl. Phys. B** 907, (2016) 249-257.
*Impact Factor-3.185* *Citations-02*

17. **Surender Verma**, "Vanishing Effective Majorana Neutrino Mass and Light Sterile Neutrino" **Mod. Phys. Lett. A**, 31 (2016) 06, 1650040.
*Impact Factor-1.367* *Citations-01*

18. **Surender Verma** and Shankita Bhardwaj, "Non-vanishing $\theta_{13}$ and CP-Violation in Inverse Neutrino Mass Matrix", **Springer Proc. Phys.** 174, 383-387 (2016).

19. **Surender Verma,** "Theoretical and Phenomenological Status of Neutrino Physics: A Review", **Advances in High Energy Physics**, 2015, open source article ID 385968.
*Impact Factor-1.953 Citations-09*

20. **Surender Verma**, "Maximal *CP*-Violation in Neutrino Mass Matrix in light of the latest Daya Bay result on theta_{13}", **Phys. Lett. B** 714, 92-96 (2012); arXiv:1206.6583 [hep-ph].
*Impact Factor-4.162 Citations-09*

21. **Surender Verma**, "Non-zero $\theta_{13} and *CP*-Violation in Inverse Neutrino Mass Matrix", **Nucl. Phys. B** 854, 340-349 (2012); arXiv:1109.4228 [hep-ph].
*Impact Factor-3.185 Citations-25*

22. S. Dev, Sanjeev Kumar, **Surender Verma**, Shivani Gupta and R. R. Gautam, "Four Zero Texture Fermion Mass Matrices in SO(10) GUT", **Euro. Phys. J. C** 70, 1940 (2012).
*Impact Factor-4.843 Citations-12*

23. S. Dev and **Surender Verma**, "Leptogenesis in a Hybrid Texture Neutrino Mass Model", **Mod. Phys. Lett. A** 25, 2837-2848 (2010); arXiv:1005.4521 [hep-ph].
*Impact Factor-1.367 Citations-03*

24. S. Dev, **Surender Verma**, Shivani Gupta and Radha Raman Gautam, "Neutrino Mass Matrices with a Texture Zero and a Vanishing Minor", **Phys. Rev. D** 81, 053010 (2010).
*Impact Factor-4.368 Citations-45*

25. S. Dev, **Surender Verma** and Shivani Gupta, "Phenomenological Analysis of Hybrid Textures of Neutrinos", **Phys. Lett. B** 687, 53-60 (2010); arXiv: 0909.3182v3 [hep-ph].
*Impact Factor-4.162 Citations-38*

26. S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, "Phenomenological Implications of a Class of Lepton mass matrices", **Mod. Phys. Lett. A** 24, 2251-2261 (2009); arXiv:0810.3080 [hep-ph].
*Impact Factor-1.367 Citations-05*

27. S. Dev, Sanjeev Kumar and **Surender Verma**, "*CP*-odd weak basis invariants and Texture Zeros", **Phys. Rev. D** 79, 033011 (2009).
*Impact Factor-4.368 Citations-13*

28. S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, "*CP*-Violation in Two Texture Zero Neutrino Mass Matrices", **Phys. Lett. B** 656, 79-82 (2007); arXiv:0708.3321 [hep-ph].
*Impact Factor-4.162 Citations-19*

**29.** S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, "Phenomenology of two-texture zero neutrino mass matrices," **Phys. Rev. D** 76, 013002 (2007) [arXiv: hep-ph/0612102].
*Impact Factor-4.368 Citations-104*

**30.** S. Dev, Sanjeev Kumar, **Surender Verma** and Shivani Gupta, "Phenomenological implications of a class of neutrino mass matrices," **Nucl. Phys. B** 784 (2007) 103-117 [arXiv: hep-ph/0611313].
*Impact Factor-3.185 Citations-65*

**31.** S. Dev, Sanjeev Kumar and **Surender Verma**, "Model independent constraints on non-electronic flavors in the solar boron neutrino flux", **Mod. Phys. Lett. A** 21, 1761 (2006) [arXiv: hep-ph/ 0512178].
*Impact Factor-1.367 Citations-03*

**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.