




Faculty details pro-forma for DU website

Title	Dr.	First Name	Sanjeev Kumar	Last Name	Verma		
Designation	Assistant Professor						
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Web-Page	https://sanjeevkumarverma.wordpress.com						
Educational Qualifications							
Degree	Institution				Year		
Ph.D.	Himachal Pradesh University				2008		
M.Sc.	Himachal Pradesh University				2002		
B.Sc.	Himachal Pradesh University				2000		

Career Profile

I joined University of Delhi in 2010. I worked at Aligarh Muslim University and Thapar University for two years before joining University of Delhi.

Administrative Assignments

I am involved in the administrative work related to entrance exams and admissions to M.Sc. and Ph.D. I am also involved in the analysis of the student feedback for the Department.

Areas of Interest / Specialization

High energy physics, astrophysics, cosmology

Subjects Taught

Classical mechanics, Quantum mechanics, Electromagnetic Theory, Advanced numerical techniques, Computer lab.

Time table of the subjects taught during the current semester

S.No.	Subject	Days	Time	Classroom
1.	Quantum Mechanics			
2.	Computer Lab			

Research Guidance

I have supervised 2 Ph.D. students. One has been awarded Ph.D. while other has submitted his thesis. Currently, I am supervising 2 Ph.D. students.

Publications Profile

1) Neutrino oscillations, solar anti-neutrinos and the solar magnetic fields

By S. Dev, Sanjeev Kumar.

hep-ph/0308054.

2) Constraints on the neutrino parameters from the 'rise-up' in the boron neutrino spectrum at low energies

By S. Dev, Sanjeev Kumar.

hep-ph/0409325.

10.1142/S0217732305017032.

Mod.Phys.Lett. A20 (2005) 2083.

- 3) Constraints on weakly mixed sterile neutrinos in the light of SNO salt phase and 766.3 T_y KamLAND data
By S. Dev, Sanjeev Kumar.
hep-ph/0504237.
[10.1142/S0217732305018189](https://arxiv.org/abs/10.1142/S0217732305018189).
Mod.Phys.Lett. A20 (2005) 2957-2968.
- 4) Model independent constraints on non-electronic flavors in the solar boron neutrino flux
By S. Dev, Sanjeev Kumar, Surender Verma.
hep-ph/0512178.
[10.1142/S021773230602024X](https://arxiv.org/abs/10.1142/S021773230602024X).
Mod.Phys.Lett. A21 (2006) 1761-1768.
- 5) Neutrino Parameter Space for a Vanishing θ_{ee} Element in the Neutrino Mass Matrix
By S. Dev, Sanjeev Kumar.
hep-ph/0607048.
[10.1142/S0217732307021767](https://arxiv.org/abs/10.1142/S0217732307021767).
Mod.Phys.Lett. A22 (2007) 1401-1410.
- 6) Spectral distortions at super-Kamiokande
By S. Dev, Sanjeev Kumar.
hep-ph/0607176.
[10.1103/PhysRevD.74.117301](https://arxiv.org/abs/10.1103/PhysRevD.74.117301).
Phys.Rev. D74 (2006) 117301.
- 7) Implications of unitarity and precision measurements on CKM matrix elements
By Gulsheen Ahuja, Manmohan Gupta, Sanjeev Kumar, Monika Randhawa.
hep-ph/0608074.
[10.1016/j.physletb.2007.02.005](https://arxiv.org/abs/10.1016/j.physletb.2007.02.005).
Phys.Lett. B647 (2007) 394-399.
- 8) Phenomenological implications of a class of neutrino mass matrices
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta.
hep-ph/0611313.
[10.1016/j.nuclphysb.2007.06.030](https://arxiv.org/abs/10.1016/j.nuclphysb.2007.06.030).
Nucl.Phys. B784 (2007) 103-117.
- 9) Phenomenology of two-texture zero neutrino mass matrices
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta.
hep-ph/0612102.
[10.1103/PhysRevD.76.013002](https://arxiv.org/abs/10.1103/PhysRevD.76.013002).
Phys.Rev. D76 (2007) 013002.
- 10) Texture 4 zero Fritzsch-like lepton mass matrices
By Gulsheen Ahuja, Sanjeev Kumar, Monika Randhawa, Manmohan Gupta, S. Dev.
hep-ph/0703005 [HEP-PH].
[10.1103/PhysRevD.76.013006](https://arxiv.org/abs/10.1103/PhysRevD.76.013006).
Phys.Rev. D76 (2007) 013006.

- 11) CP violation in two texture zero neutrino mass matrices
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta.
arXiv:0708.3321 [hep-ph].
[10.1016/j.physletb.2007.09.013](https://doi.org/10.1016/j.physletb.2007.09.013).
Phys.Lett. B656 (2007) 79-82.
- 12) Degeneracies of neutrino mass matrices with two texture zeros
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta.
[10.1063/1.2803815](https://doi.org/10.1063/1.2803815).
AIP Conf.Proc. 939 (2007) no.1, 273-276.
- 13) Implications of the measurement of the rise-up in the SNO CC spectrum
By Jyoti Dhar Sharma, S. Dev, Sanjeev Kumar.
[10.1063/1.2803819](https://doi.org/10.1063/1.2803819).
AIP Conf.Proc. 939 (2007) no.1, 298-301.
- 14) Two-Zero Symmetric Neutrino Mass Matrices in Minimal Supersymmetric SO(10)
By S. Dev, Sanjeev Kumar.
arXiv:0801.2018 [hep-ph].
- 15) Phenomenological Implications of a Class of Lepton Mass Matrices
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta.
arXiv:0810.3083 [hep-ph].
[10.1142/S0217732309030680](https://doi.org/10.1142/S0217732309030680).
Mod.Phys.Lett. A24 (2009) 2251-2261.
- 16) CP-odd weak basis invariants and texture zeros
By S. Dev, Sanjeev Kumar, Surender Verma.
arXiv:0901.2819 [hep-ph].
[10.1103/PhysRevD.79.033011](https://doi.org/10.1103/PhysRevD.79.033011).
Phys.Rev. D79 (2009) 033011.
- 17) Unitarity constraints on trimaximal mixing
By Sanjeev Kumar.
arXiv:1007.0808 [hep-ph].
[10.1103/PhysRevD.85.079904](https://doi.org/10.1103/PhysRevD.85.079904), [10.1103/PhysRevD.82.013010](https://doi.org/10.1103/PhysRevD.82.013010).
Phys.Rev. D82 (2010) 013010, Erratum: Phys.Rev. D85 (2012) 079904.
- 18) Implications of a class of neutrino mass matrices with texture zeros for non-zero θ_{13}
By Sanjeev Kumar.
arXiv:1108.2137 [hep-ph].
[10.1103/PhysRevD.84.077301](https://doi.org/10.1103/PhysRevD.84.077301).
Phys.Rev. D84 (2011) 077301.
- 19) Hadron Energy Resolution and Physics Analysis For INO-ICAL Detector,
By Daljeet Kaur, Md. Naimuddin, Sanjeev Verma.
DAE Symp.Nucl.Phys. 57 (2012) 690-691.
- 20) Four Zero Texture Fermion Mass Matrices in SO(10) GUT
By S. Dev, Sanjeev Kumar, Surender Verma, Shivani Gupta, R.R. Gautam.
arXiv:1203.1403 [hep-ph].
[10.1140/epjc/s10052-012-1940-2](https://doi.org/10.1140/epjc/s10052-012-1940-2).
Eur.Phys.J. C72 (2012) 1940.

- 21) Hadron energy response of the Iron Calorimeter detector at the India-based Neutrino Observatory
By Moon Moon Devi et al.
arXiv:1304.5115 [physics.ins-det].
[10.1088/1748-0221/8/11/P11003](https://doi.org/10.1088/1748-0221/8/11/P11003).
JINST 8 (2013) P11003.
- 22) Symmetry based parametrizations of the lepton mixing matrix
By Sanjeev Kumar.
arXiv:1305.0692 [hep-ph].
[10.1103/PhysRevD.88.016009](https://doi.org/10.1103/PhysRevD.88.016009).
Phys.Rev. D88 (2013) no.1, 016009.
- 23) INO-ICAL detector sensitivity for the measurement of atmospheric neutrino mixing parameters
By Daljeet Kaur, Md. Naimuddin, Sanjeev Kumar.
[10.3204/DESY-PROC-2014-04/202](https://doi.org/10.3204/DESY-PROC-2014-04/202).
- 24) The sensitivity of the ICAL detector at India-based Neutrino Observatory to neutrino oscillation parameters
By Daljeet Kaur, Md. Naimuddin, Sanjeev Kumar.
arXiv:1409.2231 [hep-ex].
[10.1140/epjc/s10052-015-3374-0](https://doi.org/10.1140/epjc/s10052-015-3374-0).
Eur.Phys.J. C75 (2015) no.4, 156.
- 25) Octant of θ_{23} and precision measurement of atmospheric neutrino oscillations at INO-ICAL detector
By Daljeet Kaur, Md. Naimuddin, Sanjeev Kumar.
- 26) Physics Potential of the ICAL detector at the India-based Neutrino Observatory (INO)
By ICAL Collaboration (Shakeel Ahmed et al.).
arXiv:1505.07380 [physics.ins-det].
[10.1007/s12043-017-1373-4](https://doi.org/10.1007/s12043-017-1373-4).
Pramana 88 (2017) no.5, 79.
- 27) Anomalous X-ray galactic signal from 7.1 keV spin-3/2 dark matter decay
By Sukanta Dutta, Ashok Goyal, Sanjeev Kumar.
arXiv:1509.02105 [hep-ph].
[10.1088/1475-7516/2016/02/016](https://doi.org/10.1088/1475-7516/2016/02/016).
JCAP 1602 (2016) no.02, 016.
- 28) Determination of θ_{23} Octant and Precision Measurement of Atmospheric Neutrino Oscillation Parameters @ INO-ICAL
By Daljeet Kaur, Md. Naimuddin, Sanjeev Kumar.
[10.1007/978-3-319-25619-1_41](https://doi.org/10.1007/978-3-319-25619-1_41).
Springer Proc.Phys. 174 (2016) 267-272.
- 29) Precision measurement of neutrino oscillation parameters @ INO-ICAL detector
By Daljeet Kaur, Md. Naimuddin, Sanjeev Kumar.
[10.1016/j.nuclphysbps.2015.10.028](https://doi.org/10.1016/j.nuclphysbps.2015.10.028).
Nucl.Part.Phys.Proc. 273-275 (2016) 2678-2680.
- 30) Zeros in the magic neutrino mass matrix
By Radha Raman Gautam, Sanjeev Kumar.
arXiv:1607.08328 [hep-ph].
[10.1103/PhysRevD.94.036004](https://doi.org/10.1103/PhysRevD.94.036004).
Phys.Rev. D94 (2016) no.3, 036004.

- 31) Neutrino/Anti-neutrino oscillation analysis using non-identical atmospheric oscillation parameters
By Daljeet Kaur, Zubair Ahmad Dar, Sanjeev Kumar, Md Naimuddin.
DAE Symp.Nucl.Phys. 62 (2017) 974-975.
- 32) Independent measurement of neutrino and antineutrino mass-square splittings at the INO-ICAL experiment.
By Zubair Ahmad Dar, Daljeet Kaur, Sanjeev Kumar, Md Naimuddin.
DAE Symp.Nucl.Phys. 62 (2017) 984-985.
- 33) Simple textures for neutrino mass matrix with magic symmetry
By Kanwaljeet S. Channey, Sanjeev Kumar.
DAE Symp.Nucl.Phys. 62 (2017) 988-990.
- 34) Search for the differences in atmospheric neutrino and antineutrino oscillation parameters at the INO-ICAL experiment
By Daljeet Kaur, Zubair Ahmad Dar, Sanjeev Kumar, Md. Naimuddin.
arXiv:1703.06710 [hep-ex].
[10.1103/PhysRevD.95.093005](https://arxiv.org/abs/1703.06710).
Phys.Rev. D95 (2017) no.9, 093005.
- 35) Implications of texture zeros for a variant of tribimaximal mixing
By Sanjeev Kumar, Radha Raman Gautam.
arXiv:1706.03258 [hep-ph].
[10.1103/PhysRevD.96.015020](https://arxiv.org/abs/1706.03258).
Phys.Rev. D96 (2017) no.1, 015020.
- 36) Phenomenological implications of two simple modifications to Tri-Bimaximal mixing
By Kanwaljeet S. Channey, Sanjeev Kumar.
arXiv:1708.03473 [hep-ph].
[10.1142/S0217732317501371](https://arxiv.org/abs/1708.03473).
Mod.Phys.Lett. A32 (2017) no.26, 1750137.
- 37) Trimaximal TM_{12} and TM_{23} Mixings as Perturbation of Tri-Bimaximal Mixing
By Kanwaljeet S. Channey, Sanjeev Kumar.
[10.1007/978-3-319-73171-1_110](https://arxiv.org/abs/1708.03473).
Springer Proc.Phys. 203 (2018) 471-474.
- 38) Two Zeros in the Magic Neutrino Mass Matrix
By Radha Raman Gautam, Sanjeev Kumar.
[10.1007/978-3-319-73171-1_52](https://arxiv.org/abs/1708.03473).
Springer Proc.Phys. 203 (2018) 231-233.
- 39) The INO-ICAL Sensitivity for the Separate Measurement of Neutrinos/Anti-neutrinos Parameters
By Daljeet Kaur, Zubair Ahmad Dar, Sanjeev Kumar, Md. Naimuddin.
[10.1007/978-3-319-73171-1_98](https://arxiv.org/abs/1708.03473).
Springer Proc.Phys. 203 (2018) 423-426.
- 40) Two simple textures of the magic neutrino mass matrix
By Kanwaljeet S. Channey, Sanjeev Kumar.
arXiv:1812.10268 [hep-ph].
[10.1088/1361-6471/aaf55e](https://arxiv.org/abs/1812.10268).
J.Phys. G46 (2019) no.1, 015001.

41) Independent measurement of muon neutrino and antineutrino oscillations at the INO-ICAL experiment
By Zubair Ahmad Dar, Daljeet Kaur, Sanjeev Kumar, Md Naimuddin.
[10.1088/1361-6471/ab11f4](https://doi.org/10.1088/1361-6471/ab11f4).
J.Phys. G46 (2019) no.6, 065001.

Publications in the Last one year

1) Trimaximal TM_{12} and TM_{23} Mixings as Perturbation of Tri-Bimaximal Mixing
By Kanwaljeet S. Channey, Sanjeev Kumar.
[10.1007/978-3-319-73171-1_110](https://doi.org/10.1007/978-3-319-73171-1_110).
Springer Proc.Phys. 203 (2018) 471-474.

2) Two Zeros in the Magic Neutrino Mass Matrix
By Radha Raman Gautam, Sanjeev Kumar.
[10.1007/978-3-319-73171-1_52](https://doi.org/10.1007/978-3-319-73171-1_52).
Springer Proc.Phys. 203 (2018) 231-233.

3) The INO-ICAL Sensitivity for the Separate Measurement of Neutrinos/Anti-neutrinos Parameters
By Daljeet Kaur, Zubair Ahmad Dar, Sanjeev Kumar, Md. Naimuddin.
[10.1007/978-3-319-73171-1_98](https://doi.org/10.1007/978-3-319-73171-1_98).
Springer Proc.Phys. 203 (2018) 423-426.

4) Two simple textures of the magic neutrino mass matrix
By Kanwaljeet S. Channey, Sanjeev Kumar.
arXiv:1812.10268 [hep-ph].
[10.1088/1361-6471/aaf55e](https://doi.org/10.1088/1361-6471/aaf55e).
J.Phys. G46 (2019) no.1, 015001.

5) Independent measurement of muon neutrino and antineutrino oscillations at the INO-ICAL experiment
By Zubair Ahmad Dar, Daljeet Kaur, Sanjeev Kumar, Md Naimuddin.
[10.1088/1361-6471/ab11f4](https://doi.org/10.1088/1361-6471/ab11f4).
J.Phys. G46 (2019) no.6, 065001.

Conference Organization/ Presentations (in the last three years)

I was involved in organisation of the DAE symposium in High Energy Physics at University of Delhi.

Research Projects (Major Grants/Research Collaboration)

I am a part of India based Neutrino Observatory, a mega project of Government of India. I have completed a DST fast track project and several DU R&D grants.

Awards and Distinctions

Association With Professional Bodies
Other Activities



(Sanjeev Kumar Verma)

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.