Faculty Details proforma for DU Web-site

Title	Prof	First Name	KIRTI	Last Name	RANJAN	Photograph
Designation	PROFESSOR					
Address	Room No. 189, 2nd Floor, Multistoreyed building, Department of Physics & Astrophysics, University of Delhi					
Phone No Office	91-11-27667036					
Residence						
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Email	Kirti.Ranjan@cern.ch, kirtiranjan@gmail.com, kranjan@physics.du.ac.in					
Web-Page						

Educational Qualifications

Degree	Institution	Year
Ph.D.	University of Delhi	1998-2003
M.Sc. Physics	University of Delhi	1996-1998
B.Sc.(H) Physics	University of Delhi	1993-1996

Career Profile

Organisation / Institution	Designation	Duration	Role
Department of Physics and Astrophysics, University of Delhi, Delhi – 7.	Professor	May 2013 – onwards	Teaching and research in Experimental High Energy Physics/Accelerator physics
Department of Physics and Astrophysics, University of Delhi, Delhi – 7.	Associate Professor	May 2010 – May 2013	Teaching and research in Experimental High Energy Physics/Accelerator physics
Department of Physics and Astrophysics, University of Delhi, Delhi – 7.	Reader	May 2007 – May 2010	Teaching and research in Experimental High Energy Physics/Accelerator physics
FermiLab, Batavia, U.S.	Associate Scientist	8 months (Sep. 2006 – April 2007)	Understand beam dynamics issues in proposed International Linear Collider (ILC) Project, and I have been actively involved in the DØ Experiment
FermiLab, Batavia, U.S.	Guest Scientist	Oct. 2003 to Aug. 2006	Involved in two major International Experimental High Energy Physics programs: proposed International Linear Collider (ILC) Project & DØ Experiment

Administrative Assignments

- **Director, Centre for Detector and Related Software Technology,** Department of Physics and Astrophysics, University of Delhi, Delhi – 110007, since **July 2010**.
- **Officer on Special Duty (OSD), Admissions** of the University of Delhi for the academic year 2016-17.
- Member of the Admission Advisory Committee, University of Delhi, for academic year 2018-19.
- Member of the Admission Committee, University of Delhi, for academic year 2017-18.
- **Co-coordinator, M.Tech. Nuclear Science and Technology,** Department of Physics, University of Delhi, since **2008**.
- Member of the Governing Body, Kirori Mal College, since Sept 2016. Treasurer and Building Committee Convenor.
- **Project Leader** of University of Delhi Group in the CMS Experiment at the Large Hadron Collider, CERN, Switzerland.
- **Coordinator (joint), Internal Quality Assurance Cell (IQAC) of the DU; since 13th April 2018**

- **Member of the India-CERN Task force, constituted by DAE-DST Coordination committee held on 25th May 2017.**

Areas of Interest / Specialization

Experimental high energy physics/Accelerator Physics

Subjects Taught

- **Postgraduate:**
  - **Theory courses in M.Sc. (Physics): Nuclear and Particle Physics, Quantum Mechanics I, Statistical Mechanics (All Core Courses);**
  - **Laboratory courses in M.Sc. (Physics): M.Sc. (Previous) Nuclear Physics Laboratory, Computer Programming (Core Course);**
  - **M.Tech. Nuclear Science and Technology: Accelerator Physics and Technology**
- **Ph.D. Course Work: Statistics and Computer Applications**

Time table of the subjects taught during the current semester

S.No.	Subject	Days	Time	Classroom
1	M.Sc. (Prev) Nuclear Physics Core Lab	Tue	9am – 1 pm	Nuclear Physics FF Lab
2	M.Sc. (Prev) Nuclear Physics Core Lab	Wed	9am – 1 pm	Nuclear Physics FF Lab

Research Guidance

Sr. No.	Title of theses	Status	Name of the student & current status
1	Beam dynamics Studies and the Design, Fabrication and Testing of Superconducting Radiofrequency cavity for High Intensity Proton Accelerator (2007)	Awarded (2013)	Arun Saini (Associate Scientist at Fermilab, US)
2	Search for the Standard Model Higgs boson in Di-electron plus missing transverse energy final states at sqrt(s)=1.96 TeV with D0 experiment (2007)	Awarded (2014)	Ruchika Nayyar (Postdoc at Univ. of Arizona, US after Ph.D.)
3	Characteristics of Silicon Detectors and Study of large PT particle Production at Collider Energies (2008)	Awarded (2015)	Pooja Saxena (Postdoc at DESY, Germany after Ph.D.)
4	Search for the SM Higgs Boson in the H→ZZ→ee(μμ)νν channel in the CMS Experiment at the LHC (2009)	Awarded (2015)	Arun Kumar (Postdoc at National Taiwan University, Taiwan after Ph.D.)
5	Search for the SM Higgs boson in the H→WW→lνjj decay mode and Measurement of WW Production Rate in Vector Boson Fusion Topology in the CMS Experiment at the LHC (2010)	Awarded (2016)	Ajay Kumar (Adhoc teacher in SriAurobindo College, D.U.)
6	Study of some aspects of High momentum transfer processes in the CMS Experiment at the LHC, CERN (2013)	Ongoing	Sumit Keshri
7.	Test of the Standard Model and possible Searches for Physics beyond the Standard Model (2014)	Ongoing	Priyanka Phogat
8.	Development of silicon sensors for particle detection in high energy physics experiments (2015)	Ongoing	Chakresh Jain

Publications Profile

Total Published papers in International peer reviewed Journals: More than 1000
h-index: 88
Scopus Author Profile Link:
https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=35227864000&zone=

List of 10 most significant publications.

1. "Search for a standard-model-like Higgs boson with a mass in the range 145 to 1000 GeV at the LHC", by CMS Collaboration, S. Chatrchyan, K. Ranjan et al, European. Physics Journal C, 73 (2013) 2469 [CMS Internal documents: CMS-HIG-12-034, CERN-PH-EP-2013-050 corresponding to CMS AN-2012/138 and CMS-HIG-13-031, CMS PAS HIG-13-027 and CMS AN-2012/463. Thesis work of two Ph.D. students: see details in "20. Any additional information"]

2. "Search for the standard model Higgs boson in the H → ZZ → 2l2v channel in pp collisions at sqrt(s)=7TeV", by CMS Collaboration, S. Chatrchyan, K. Ranjan et al., Journal of High Energy Physics 03 (2012) 040 [CMS Internal documents: CMS-HIG-11-026, CERN-PH-EP-2012-033. corresponding to CMS AN-2011/407. Thesis work of one Ph.D. student: see details in "20. Any additional information"]

3. "Development of AC-coupled, poly-silicon biased, p-on-n silicon strip detectors in India for HEP experiments", Geetika Jain, Ranjeet Dalal, Ashutosh Bhardwaj, Kirti Ranjan, Alexander Dierlamm, Frank Hartmann, Robert Eber, Marcel Demarteau, Nuclear Instruments and Methods in Physics Research Section A (NIM-A), Volume 882, 21 February 2018, Pages 1-10.

4. "Combined effect of bulk and surface damage on strip insulation properties of proton irradiated n+-p− Si strip sensors", Ranjeet Dalal, A. Bhardwaj, K. Ranjan, Michael Moll and Anna Elliott-Peisert, Journal of Instrumentation (JINST), (2014), 9, P04007.

5. "Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC", S. Chatrchyan,…Kirti Ranjan, Physics Letters B, Volume 716, Issue 1, 17 September 2012, Pages 30–61

6. "Superconducting RF cavity design study for the squeezed ILC section of the high intensity H− linac for the Project-X facility", Arun Saini, K. Ranjan, A. Lunin, S. C. Mishra, N. Perunov, N. Solyak, V. P. Yakovlev, Supercond. Sci. Technol. 25 025024 (2012) [downloaded 250 times in 15 days from the date of publication. Across all IOP journals 10% of articles were accessed over 250 times in that quarter.]

7. "High-voltage planar Si detectors for high-energy physics experiments: comparison between metal-overhang and field-limiting ring techniques", K. Ranjan, A. Bhardwaj, Namrata, S. Chatterji, A. K. Srivastava, Ashish Kumar, Manoj Kumar Jha and R. K. Shivpuri, Solid State Electronics 48, 1587 (2004).

8. "Search for Higgs Boson Production in Oppositely Charged Dilepton and Missing Energy Events in $p\bar{p}$ Collisions at $\sqrt{s}$ = 1.96 TeV", by D0 Collaboration (V.M. Abazov…K.Ranjan et al.), Phys. Rev. D 86, 032010 (2012). [Thesis work of one Ph.D. student: see point 20. Any additional information]

9. "Development of multi-guard ring-equipped p+–n Si microstrip sensors for the SiD detector at the ILC", P Saxena, K Ranjan, A Bhardwaj, R K Shivpuri and S Bhattacharya, 25 (2010) 105012, 1-11

10. "Measurement of the $t \bar{t}$ production cross-section in $p \bar{p}$ collisions using dilepton events", by D0 Collaboration (V.M. Abazov…K.Ranjan et al.), Phys.Rev. D76 (2007) 052006. [D0 internal notes: 5128, 5031, 5011, 4850]

Publications in the Last one year

https://inspirehep.net/search?ln=en&ln=en&p=find+a+ranjan%2Ck+and+type+P+and+da+2016-04-01+-%3E+2017-03-31&of=hcv&action_search=Search&sf=earliestdate&so=d&rm=&rg=250&sc=0

1) Search for high-mass resonances in final states with a lepton and missing transverse momentum at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.11133 [hep-ex]].
10.1007/JHEP06(2018)128.
JHEP 1806 (2018) 128.

2) Search for a heavy right-handed W boson and a heavy neutrino in events with two same-flavor leptons and two jets at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.11116 [hep-ex]].
10.1007/JHEP05(2018)148.
JHEP 1805 (2018) no.05, 148.

3) Measurement of differential cross sections for the production of top quark pairs and of additional jets in lepton+jets events from pp collisions at $\sqrt{s} =$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.08856 [hep-ex]].
10.1103/PhysRevD.97.112003.
Phys.Rev. D97 (2018) no.11, 112003.

4) Search for $\mathrm{t}\overline{\mathrm{t}}$H production in the all-jet final state in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.06986 [hep-ex]].
10.1007/JHEP06(2018)101.
JHEP 1806 (2018) 101.

5) Search for high-mass resonances in dilepton final states in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.06292 [hep-ex]].
10.1007/JHEP06(2018)120.
JHEP 1806 (2018) 120.

6) Observation of proton-tagged, central (semi)exclusive production of high-mass lepton pairs in pp collisions at 13 TeV with the CMS-TOTEM precision proton spectrometer.
By CMS and TOTEM Collaborations (Albert M Sirunyan et al.).
[arXiv:1803.04496 [hep-ex]].
10.1007/JHEP07(2018)153.
JHEP 1807 (2018) 153.

7) Measurements of differential cross sections of top quark pair production as a function of kinematic event variables in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1803.03991 [hep-ex]].
10.1007/JHEP06(2018)002.
JHEP 1806 (2018) 002.

8) Search for a heavy resonance decaying into a Z boson and a vector boson in the $ \nu \overline{\nu}\mathrm{q}\overline{\mathrm{q}} $ final state.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.03838 [hep-ex]].
10.1007/JHEP07(2018)075.
JHEP 1807 (2018) 075.

9) Test beam demonstration of silicon microstrip modules with transverse momentum discrimination for the future CMS tracking detector.
By CMS Tracker Collaboration (W. Adam et al.).
10.1088/1748-0221/13/03/P03003.

JINST 13 (2018) no.03, P03003.

10) Jet properties in PbPb and pp collisions at $ \sqrt{s_{\mathrm{N}\,\mathrm{N}}}=5.02 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1803.00042 [nucl-ex]].
10.1007/JHEP05(2018)006.
JHEP 1805 (2018) 006.

11) Search for a heavy resonance decaying to a pair of vector bosons in the lepton plus merged jet final state at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.09407 [hep-ex]].
10.1007/JHEP05(2018)088.
JHEP 1805 (2018) 088.

12) Search for narrow resonances in the b-tagged dijet mass spectrum in proton-proton collisions at $\sqrt{s} =$ 8 TeV.
By CMS Collaboration (A. M. Sirunyan et al.).
[arXiv:1802.06149 [hep-ex]].
10.1103/PhysRevLett.120.201801.
Phys.Rev.Lett. 120 (2018) no.20, 201801.

13) Measurement of the Λ_b polarization and angular parameters in $\Lambda_b\to J/\psi\, \Lambda$ decays from pp collisions at $\sqrt{s}=$ 7 and 8 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.04867 [hep-ex]].
10.1103/PhysRevD.97.072010.
Phys.Rev. D97 (2018) no.7, 072010.

14) Search for heavy neutral leptons in events with three charged leptons in proton-proton collisions at $\sqrt{s} =$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.02965 [hep-ex]].
10.1103/PhysRevLett.120.221801.
Phys.Rev.Lett. 120 (2018) no.22, 221801.

15) Measurement of the inelastic proton-proton cross section at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.02613 [hep-ex]].
10.1007/JHEP07(2018)161.
JHEP 1807 (2018) 161.

16) Search for natural and split supersymmetry in proton-proton collisions at $ \sqrt{s}=13 $ TeV in final states with jets and missing transverse momentum.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.02110 [hep-ex]].
10.1007/JHEP05(2018)025.
JHEP 1805 (2018) 025.

17) Search for single production of vector-like quarks decaying to a b quark and a Higgs boson.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.01486 [hep-ex]].
10.1007/JHEP06(2018)031.
JHEP 1806 (2018) 031.

18) Search for lepton-flavor violating decays of heavy resonances and quantum black holes to eμ final states in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.01122 [hep-ex]].
10.1007/JHEP04(2018)073.

JHEP 1804 (2018) 073.

19) Comparing transverse momentum balance of b jet pairs in pp and PbPb collisions at $ \sqrt{s_{\mathrm{NN}}}=5.02 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1802.00707 [hep-ex]].
10.1007/JHEP03(2018)181.
JHEP 1803 (2018) 181.

20) Search for dark matter in events with energetic, hadronically decaying top quarks and missing transverse momentum at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1801.08427 [hep-ex]].
10.1007/JHEP06(2018)027.
JHEP 1806 (2018) 027.

21) Combined search for electroweak production of charginos and neutralinos in proton-proton collisions at $\sqrt{s} =$ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1801.03957 [hep-ex]].
10.1007/JHEP03(2018)160.
JHEP 1803 (2018) 160.

22) Search for new physics in events with two soft oppositely charged leptons and missing transverse momentum in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1801.01846 [hep-ex]].
10.1016/j.physletb.2018.05.062.
Phys.Lett. B782 (2018) 440-467.

23) Search for decays of stopped exotic long-lived particles produced in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1801.00359 [hep-ex]].
10.1007/JHEP05(2018)127.
JHEP 1805 (2018) 127.

24) Electroweak production of two jets in association with a Z boson in proton–proton collisions at $\sqrt{s}= $ 13 $\,\text {TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.09814 [hep-ex]].
10.1140/epjc/s10052-018-6049-9.
Eur.Phys.J. C78 (2018) no.7, 589.

25) Measurement of prompt and nonprompt charmonium suppression in $\text {PbPb}$ collisions at 5.02 $\,\text {Te}\text {V}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.08959 [nucl-ex]].
10.1140/epjc/s10052-018-5950-6.
Eur.Phys.J. C78 (2018) no.6, 509.

26) Search for R-parity violating supersymmetry in pp collisions at $\sqrt{s} = $ 13 TeV using b jets in a final state with a single lepton, many jets, and high sum of large-radius jet masses.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.08920 [hep-ex]].
10.1016/j.physletb.2018.06.028.
Phys.Lett. B783 (2018) 114-139.

27) Search for Physics Beyond the Standard Model in Events with High-Momentum Higgs Bosons and Missing Transverse Momentum in Proton-Proton Collisions at 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.08501 [hep-ex]].
10.1103/PhysRevLett.120.241801.

Phys.Rev.Lett. 120 (2018) no.24, 241801.

28) Bose-Einstein correlations in $pp, p\mathrm{Pb}$, and PbPb collisions at $\sqrt{{s}_{NN}}=0.9-7$ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.07198 [hep-ex]].
10.1103/PhysRevC.97.064912.
Phys.Rev. C97 (2018) no.6, 064912.

29) Search for lepton flavour violating decays of the Higgs boson to $\mu\tau$ and eτ in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.07173 [hep-ex]].
10.1007/JHEP06(2018)001.
JHEP 1806 (2018) 001.

30) Identification of heavy-flavour jets with the CMS detector in pp collisions at 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1712.07158 [physics.ins-det]].
10.1088/1748-0221/13/05/P05011.
JINST 13 (2018) no.05, P05011.

31) Search for the X(5568) state decaying into $\mathrm{B}^{0}_{\mathrm{s}}\pi^{\pm}$ in proton-proton collisions at $\sqrt{s} = $ 8 TeV.
By CMS Collaboration (A. M. Sirunyan et al.).
[arXiv:1712.06144 [hep-ex]].
10.1103/PhysRevLett.120.202005.
Phys.Rev.Lett. 120 (2018) no.20, 202005.

32) Azimuthal correlations for inclusive 2-jet, 3-jet, and 4-jet events in pp collisions at $\sqrt{s}= $ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.05471 [hep-ex]].
10.1140/epjc/s10052-018-6033-4.
Eur.Phys.J. C78 (2018) no.7, 566.

33) Measurement of the associated production of a single top quark and a Z boson in pp collisions at $\sqrt{s} =$ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.02825 [hep-ex]].
10.1016/j.physletb.2018.02.025.
Phys.Lett. B779 (2018) 358-384.

34) Search for the flavor-changing neutral current interactions of the top quark and the Higgs boson which decays into a pair of b quarks at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.02399 [hep-ex]].
10.1007/JHEP06(2018)102.
JHEP 1806 (2018) 102.

35) Search for new physics in final states with an energetic jet or a hadronically decaying W or Z boson and transverse momentum imbalance at $\sqrt{s}=13\text{ }\text{ }\mathrm{TeV}$.
By CMS Collaboration (A. M. Sirunyan et al.).
[arXiv:1712.02345 [hep-ex]].
10.1103/PhysRevD.97.092005.
Phys.Rev. D97 (2018) no.9, 092005.

36) Constraints on the double-parton scattering cross section from same-sign W boson pair production in proton-proton collisions at $ \sqrt{s}=8 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1712.02280 [hep-ex]].
10.1007/JHEP02(2018)032.

JHEP 1802 (2018) 032.

37) Search for pair production of excited top quarks in the lepton + jets final state.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.10949 [hep-ex]].
10.1016/j.physletb.2018.01.049.
Phys.Lett. B778 (2018) 349-370.

38) Development of AC-coupled, poly-silicon biased, p-on-n silicon strip detectors in India for HEP experiments.
By Geetika Jain, Ranjeet Dalal, Ashutosh Bhardwaj, Kirti Ranjan, Alexander Dierlamm, Frank Hartmann, Robert Eber, Marcel Demarteau.
10.1016/j.nima.2017.10.010.
Nucl.Instrum.Meth. A882 (2018) 1-10.

39) Search for new long-lived particles at $\sqrt{s} =$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.09120 [hep-ex]].
10.1016/j.physletb.2018.03.019.
Phys.Lett. B780 (2018) 432-454.

40) Search for gauge-mediated supersymmetry in events with at least one photon and missing transverse momentum in pp collisions at $\sqrt{s} = $ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.08008 [hep-ex]].
10.1016/j.physletb.2018.02.045.
Phys.Lett. B780 (2018) 118-143.

41) Search for excited quarks of light and heavy flavor in $\gamma +$ jet final states in proton–proton collisions at $\sqrt{s} =$ 13TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.04652 [hep-ex]].
10.1016/j.physletb.2018.04.007.
Phys.Lett. B781 (2018) 390-411.

42) Search for ZZ resonances in the 2ℓ2ν final state in proton-proton collisions at 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.04370 [hep-ex]].
10.1007/JHEP03(2018)003.
JHEP 1803 (2018) 003.

43) Measurement of the underlying event activity in inclusive Z boson production in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1711.04299 [hep-ex]].
10.1007/JHEP07(2018)032.
JHEP 1807 (2018) 032.

44) Measurement of the inclusive $ \mathrm{t}\overline{\mathrm{t}} $ cross section in pp collisions at $ \sqrt{s}=5.02 $ TeV using final states with at least one charged lepton.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1711.03143 [hep-ex]].
10.1007/JHEP03(2018)115.
JHEP 1803 (2018) 115.

45) Measurement of associated Z + charm production in proton-proton collisions at $\sqrt{s} = $ 8 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1711.02143 [hep-ex]].
10.1140/epjc/s10052-018-5752-x.
Eur.Phys.J. C78 (2018) no.4, 287.

46) Search for top squarks and dark matter particles in opposite-charge dilepton final states at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1711.00752 [hep-ex]].
10.1103/PhysRevD.97.032009.
Phys.Rev. D97 (2018) no.3, 032009.

47) Search for new physics in events with a leptonically decaying Z boson and a large transverse momentum imbalance in proton–proton collisions at $\sqrt{s} $ = 13 $\,\text {TeV}$.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1711.00431 [hep-ex]].
10.1140/epjc/s10052-018-5740-1.
Eur.Phys.J. C78 (2018) no.4, 291.

48) Search for supersymmetry in proton-proton collisions at 13 TeV using identified top quarks.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.11188 [hep-ex]].
10.1103/PhysRevD.97.012007.
Phys.Rev. D97 (2018) no.1, 012007.

49) Measurement of quarkonium production cross sections in pp collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1710.11002 [hep-ex]].
10.1016/j.physletb.2018.02.033.
Phys.Lett. B780 (2018) 251-272.

50) Search for standard model production of four top quarks with same-sign and multilepton final states in proton–proton collisions at $\sqrt{s} = 13\,\text {TeV} $.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.10614 [hep-ex]].
10.1140/epjc/s10052-018-5607-5.
Eur.Phys.J. C78 (2018) no.2, 140.

51) Pseudorapidity distributions of charged hadrons in proton-lead collisions at $\sqrt{s_{_\mathrm{NN}}} =$ 5.02 and 8.16 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.09355 [hep-ex]].
10.1007/JHEP01(2018)045.
JHEP 1801 (2018) 045.

52) Search for supersymmetry in events with at least three electrons or muons, jets, and missing transverse momentum in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.09154 [hep-ex]].
10.1007/JHEP02(2018)067.
JHEP 1802 (2018) 067.

53) Measurement of b hadron lifetimes in pp collisions at $\sqrt{s} =$ 8 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.08949 [hep-ex]].
10.1140/epjc/s10052-018-6014-7, 10.1140/epjc/s10052-018-5929-3.
Eur.Phys.J. C78 (2018) no.6, 457, Erratum: Eur.Phys.J. C78 (2018) no.7, 561.

54) Measurement of differential cross sections in the kinematic angular variable ϕ^* for inclusive Z boson production in pp collisions at $\sqrt{s}=$ 8 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1710.07955 [hep-ex]].
10.1007/JHEP03(2018)172.
JHEP 1803 (2018) 172.

55) Search for a massive resonance decaying to a pair of Higgs bosons in the four b quark final state in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1710.04960 [hep-ex]].
10.1016/j.physletb.2018.03.084.
Phys.Lett. B781 (2018) 244-269.

56) Measurement of angular parameters from the decay $\mathrm{B}^0 \to \mathrm{K}^{*0} \mu^+ \mu^-$ in proton-proton collisions at $\sqrt{s} = $ 8 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.02846 [hep-ex]].
10.1016/j.physletb.2018.04.030.
Phys.Lett. B781 (2018) 517-541.

57) Study of dijet events with a large rapidity gap between the two leading jets in pp collisions at $\sqrt{s}=7$ $\,\text {TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.02586 [hep-ex]].
10.1140/epjc/s10052-018-5691-6.
Eur.Phys.J. C78 (2018) no.3, 242.

58) Search for pair production of vector-like quarks in the bW$\overline{\mathrm{b}}$W channel from proton-proton collisions at $\sqrt{s} =$ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.01539 [hep-ex]].
10.1016/j.physletb.2018.01.077.
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59) Search for low mass vector resonances decaying into quark-antiquark pairs in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1710.00159 [hep-ex]].
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60) Search for supersymmetry in events with one lepton and multiple jets exploiting the angular correlation between the lepton and the missing transverse momentum in proton-proton collisions at $\sqrt{s} = $ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1709.09814 [hep-ex]].
10.1016/j.physletb.2018.03.028.
Phys.Lett. B780 (2018) 384-409.

61) Observation of Correlated Azimuthal Anisotropy Fourier Harmonics in pp and $p+Pb$ Collisions at the LHC.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.09189 [nucl-ex]].
10.1103/PhysRevLett.120.092301.
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62) Search for new phenomena in final states with two opposite-charge, same-flavor leptons, jets, and missing transverse momentum in pp collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.08908 [hep-ex]].
10.1007/JHEP03(2018)076, 10.1007/s13130-018-7845-2.
JHEP 1803 (2018) 076.

63) Measurements of the $\mathrm {p}\mathrm {p}\rightarrow \mathrm{Z}\mathrm{Z}$ production cross section and the $\mathrm{Z}\rightarrow 4\ell $ branching fraction, and constraints on anomalous triple gauge couplings at $\sqrt{s} = 13\,\text {TeV} $.
By CMS Collaboration (Albert M Sirunyan et al.).

[arXiv:1709.08601 [hep-ex]].
10.1140/epjc/s10052-018-5769-1, 10.1140/epjc/s10052-018-5567-9.
Eur.Phys.J. C78 (2018) 165, Erratum: Eur.Phys.J. C78 (2018) no.6, 515.

64) Evidence for the Higgs boson decay to a bottom quark–antiquark pair.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.07497 [hep-ex]].
10.1016/j.physletb.2018.02.050.
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65) Observation of top quark production in proton-nucleus collisions.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.07411 [nucl-ex]].
10.1103/PhysRevLett.119.242001.
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66) Observation of electroweak production of same-sign W boson pairs in the two jet and two same-sign lepton final state in proton-proton collisions at $\sqrt{s} = $ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.05822 [hep-ex]].
10.1103/PhysRevLett.120.081801.
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[arXiv:1709.05543 [hep-ex]].
10.1103/PhysRevLett.120.071802.
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68) Search for electroweak production of charginos and neutralinos in multilepton final states in proton-proton collisions at $\sqrt{s}=$ 13 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1709.05406 [hep-ex]].
10.1007/JHEP03(2018)166.
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69) Combination of inclusive and differential $ \mathrm{t}\overline{\mathrm{t}} $ charge asymmetry measurements using ATLAS and CMS data at $ \sqrt{s}=7 $ and 8 TeV.
By ATLAS and CMS Collaborations (Morad Aaboud et al.).
[arXiv:1709.05327 [hep-ex]].
10.1007/JHEP04(2018)033.
JHEP 1804 (2018) 033.

70) Search for Higgsino pair production in pp collisions at $\sqrt{s}$ = 13 TeV in final states with large missing transverse momentum and two Higgs bosons decaying via $H \to b \bar b$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.04896 [hep-ex]].
10.1103/PhysRevD.97.032007.
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71) Search for supersymmetry with Higgs boson to diphoton decays using the razor variables at $\sqrt{s} = $ 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1709.00384 [hep-ex]].
10.1016/j.physletb.2017.12.069.
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[arXiv:1708.09429 [nucl-ex]].
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Phys.Rev.Lett. 120 (2018) no.14, 142302.

73) Search for heavy resonances decaying to a top quark and a bottom quark in the lepton+jets final state in proton–proton collisions at 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1708.08539 [hep-ex]].
10.1016/j.physletb.2017.12.006.
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By CMS Collaboration (Albert M Sirunyan et al.).
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By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1708.07638 [hep-ex]].
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76) Principal-component analysis of two-particle azimuthal correlations in PbPb and $p\text{Pb}$ collisions at CMS.
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[arXiv:1708.07113 [nucl-ex]].
10.1103/PhysRevC.96.064902.
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78) Search for massive resonances decaying into WW, WZ, ZZ, qW, and qZ with dijet final states at $\sqrt{s}=13\text{ }\text{ }\mathrm{TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1708.05379 [hep-ex]].
10.1103/PhysRevD.97.072006.
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By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1708.04962 [nucl-ex]].
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By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1708.04188 [hep-ex]].
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81) Measurement of prompt D^0 meson azimuthal anisotropy in Pb-Pb collisions at $\sqrt{{s}_{NN}}$ = 5.02 TeV.
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[arXiv:1708.03497 [nucl-ex]].
10.1103/PhysRevLett.120.202301.
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By CMS Collaboration (Albert M Sirunyan et al.).
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87) Search for a light pseudoscalar Higgs boson produced in association with bottom quarks in pp collisions at $ \sqrt{s}=8 $ TeV.
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90) Measurement of the differential cross sections for the associated production of a W boson and jets in proton-proton collisions at

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[arXiv:1707.05979 [hep-ex]].
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91) Search for natural supersymmetry in events with top quark pairs and photons in pp collisions at $\sqrt{s} =$ 8 TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1707.03325 [hep-ex]].
10.1007/JHEP03(2018)167.
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92) Search for direct production of supersymmetric partners of the top quark in the all-jets final state in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1707.03316 [hep-ex]].
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93) Search for Higgs boson pair production in events with two bottom quarks and two tau leptons in proton–proton collisions at $\sqrt s$ =13TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1707.02909 [hep-ex]].
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96) Search for Higgs boson pair production in the $bb\tau\tau$ final state in proton-proton collisions at $\sqrt{(}s)=8\text{ }\text{ }\mathrm{TeV}$.
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By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1706.10194 [hep-ex]].
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98) Measurements of properties of the Higgs boson decaying into the four-lepton final state in pp collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1706.09936 [hep-ex]].
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102) Measurement of the semileptonic $ \mathrm{t}\overline{\mathrm{t}} $ + γ production cross section in pp collisions at $ \sqrt{s}=8 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
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10.1007/JHEP10(2017)006.
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103) Suppression of Excited Υ States Relative to the Ground State in Pb-Pb Collisions at $\sqrt{s_\mathrm{NN}}$=5.02 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1706.05984 [hep-ex]].
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104) Measurements of jet charge with dijet events in pp collisions at $\sqrt{s}=8$ TeV.
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105) Particle-flow reconstruction and global event description with the CMS detector.
By CMS Collaboration (A.M. Sirunyan et al.).
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107) Searches for W' bosons decaying to a top quark and a bottom quark in proton-proton collisions at 13 TeV.
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By CMS Collaboration (Albert M Sirunyan et al.).
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109) Search for pair production of vector-like T and B quarks in single-lepton final states using boosted jet substructure in proton-proton collisions at $\sqrt{s}=13$ TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
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By CMS Collaboration (Albert M Sirunyan et al.).
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By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.10141 [hep-ex]].
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114) Combination of searches for heavy resonances decaying to WW, WZ, ZZ, WH, and ZH boson pairs in proton–proton collisions at $\sqrt{s}=8$ and 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.09171 [hep-ex]].
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115) Measurement of the ${B}^{\pm}$ Meson Nuclear Modification Factor in Pb-Pb Collisions at $\sqrt{{s}_{NN}}=5.02\text{ }\text{ }\mathrm{TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.04727 [hep-ex]].
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116) Search for Supersymmetry in pp Collisions at $\sqrt{s}=13\text{ }\text{ }\mathrm{TeV}$ in the Single-Lepton Final State Using the Sum of Masses of Large-Radius Jets.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.04673 [hep-ex]].
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117) Search for new phenomena with the $M_{\mathrm {T2}}$ variable in the all-hadronic final state produced in proton–proton collisions at $\sqrt{s} = 13$ $\,\text {TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).

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118) Search for Charged Higgs Bosons Produced via Vector Boson Fusion and Decaying into a Pair of W and Z Bosons Using pp Collisions at $\sqrt{s}=13\text{ }\text{ }\mathrm{TeV}$.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.02942 [hep-ex]].
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119) Measurement of the triple-differential dijet cross section in proton-proton collisions at $\sqrt{s}=8\,\text {TeV} $ and constraints on parton distribution functions.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.02628 [hep-ex]].
10.1140/epjc/s10052-017-5286-7.
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120) Search for black holes in high-multiplicity final states in proton-proton collisions at $ \sqrt{s}=$13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1705.01403 [hep-ex]].
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121) Search for supersymmetry in multijet events with missing transverse momentum in proton-proton collisions at 13 TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1704.07781 [hep-ex]].
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122) Search for physics beyond the standard model in events with two leptons of same sign, missing transverse momentum, and jets in proton–proton collisions at $\sqrt{s} = 13\,\text {TeV} $.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1704.07323 [hep-ex]].
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123) Measurement of the top quark mass in the dileptonic $t\bar{t}$ decay channel using the mass observables $M_{b\ell}$, M_{T2}, and $M_{b\ell\nu}$ in pp collisions at $\sqrt{s}=8$ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1704.06142 [hep-ex]].
10.1103/PhysRevD.96.032002.
Phys.Rev. D96 (2017) no.3, 032002.

124) Search for $ \mathrm{t}\overline{\mathrm{t}} $ resonances in highly boosted lepton+jets and fully hadronic final states in proton-proton collisions at $ \sqrt{s}=13 $ TeV.
By CMS Collaboration (Albert M Sirunyan et al.).
[arXiv:1704.03366 [hep-ex]].
10.1007/JHEP07(2017)001.
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125) Measurements of the pp $\to W\gamma\gamma$ and pp $\to Z\gamma\gamma$ cross sections and limits on anomalous quartic gauge couplings at $ \sqrt{s}=8 $ TeV.
By CMS Collaboration (A.M. Sirunyan et al.).
[arXiv:1704.00366 [hep-ex]].
10.1007/JHEP10(2017)072.

JHEP 1710 (2017) 072.

Conference Organization/ Presentations (in the last three years)

Joint Convenor of the XXII DAE-BRNS High Energy Physics Symposium 2016, organized by the Department of Physics and Astrophysics, University of Delhi, Delhi, India between 12 – 16 December, 2016.

Research Projects (Major Grants/Research Collaboration)

S.No.	Title of Research Project	PI/ co-PI/ joint PI	Period	Total Grants sanctioned & received (in rupees);	National/ Inter-national ; Name of the Funding Agency
1.	Compact Muon Solenoid (CMS) Upgrade, Operation and Utilization"	PI	31.7.2014 – 31.03.2019	Rs. 9.99 Crore; Revised to 11.73 Crore in 2018	Department of Science and Technology (DST)
2.	Updating and Operation of Regional WLCG Grid System	PI	28.8.2014 – 31.03.2019	Rs. 25.30 Lakhs	Department of Science and Technology (DST)
3.	Accelerators and Detectors for future High Energy Physics Experiments http://www.iusstf.org/cms/newsimages/file/joint-center/Indo-US_JC_Compendium.pdf [Page 206 – 211]	PI	30.4.2010 - 29.4.2012	Rs. 33.79 Lakhs	Indo-US Science & Technology Forum (IUSSTF) Award for supporting Indo-US Joint Networked R&D Centre
4.	Study of New Particles with the CMS Detector at the Large Hadron Collider and Heavy Ion Physics using LHC at CERN – CMS Experiment	Co-PI till 29.4.13 and as PI from 30.4.2013	30.09.2009 - 30.4.2014	Rs. 5.61 crore	Department of Science and Technology (DST)
5.	India LHC Grid Collaboration – Enhancement of Regional World Wide Computing Grid (WLCG)	Co-PI till 29.4.13 and as PI from 30.4.2013	17.03.2010 - 31.03.2014	Rs. 28.57 Lakhs	Department of Science and Technology (DST)
6.	Radiation damage studies of Silicon Sensors	Co-PI	20-09-2012 to 19-09-2014	Rs. 4.08 Laks	Indo-Swiss Joint Research Program (Personnel Exchange Program) by DST
7.	Delhi University R&D Projects	PI	Each year from 2010 to 2015	About 2.3-2.9 Lakhs, each year	National
8.	Simulation studies and tests to develop radiation tolerant silicon detectors for high luminosity colliders	Co-PI	Sanctioned from 20th April 2017	Rs.26,91,392	Bilateral, Indo-Italy

Awards and Distinctions

- **"Excellence Award for In-Service Teachers, Departments" of University of Delhi, for contribution to academic activities, conferred on the occasion of 95th Foundation day of University of Delhi, on 1st May 2017. Sole Awardee under the category for the year 2017, selected from all the 87 Departments and 11 Centers of the University.**
- **Listed as one of the top 10 researchers in the subject area (Physics and Astrophysics) in the International Comparative**

Performance of India's Research Base (2009-14), published by National Science and Technology Management Information System (NSTMIS), a division of Department of Science and Technology (DST), Govt. of India. http://nstmis-dst.org/PDF/Elsevier.pdf [Table 5.19, *Page 106*]. Also listed as a co-author in one of the top 10 publications in the Physics and Astrophysics in Table 6.16 [*Page 126*]

- **Qualified the Joint National Eligibility Test (NET) held on 21.12.97 and awarded Junior Research Fellowship (JRF) in Physical Science under the CSIR Fellowship Schemes.**
  - **Junior Research Fellow (JRF), Council of Scientific and Industrial Research, Govt. of India : Nov. 1998 - Oct. 2000.**
  - **Senior Research Fellow (SRF), Council of Scientific and Industrial Research, Govt. of India : Nov. 2000 - Feb. 2003.**
- **Qualified Graduate Aptitude Test in Engineering (GATE)-98 held on February 8, 1998 in Physics. Secured All India Rank (AIR): 24 with percentile score of 98.41.**
- **Secured First Position in University of Delhi in M.Sc. Physics in 1998.**
- **Awarded K. S. Krishnan Gold Medal for securing highest marks in University of Delhi in M.Sc. Physics in 1998.**
- **Awarded All India Post Graduate Scholarship on meritorious performance in B.Sc. (Hons.) Physics during the period 1996-98 for pursuing Post Graduate Course.**
- **Secured First Position in Hansraj College in B.Sc. (Hons.) Physics in 1996.**
- **Secured First Position in Govt. Boys Sr. Sec. School No.4, Sarojini Nagar, New Delhi in Delhi Senior School Certificate Examination (DSSCE), 1993 of C.B.S.E. with Distinctions in all subjects.**
- **Awarded Certificate of Merit by CBSE for outstanding academic performance and for being among the top 0.1% of successful candidates of DSSCE, 1993 in English Core.**
- **Secured First Position in Govt. Boys Sr. Sec. School No.4, Sarojini Nagar, New Delhi in Delhi Secondary School Examination (DSSE), 1991 of CBSE.**

Association With Professional Bodies

Member of the CMS Collaboration, http://cms.web.cern.ch/content/cms-collaboration

Member of the RD50 Collaboration, https://rd50.web.cern.ch/rd50/

Other Activities

- **Served as a member in the four-member Internal Analysis Review Committees on important physics topics like High mass H->ZZ->2l2q, Dark Matter and Unparticles, Mono-Z(ll) events searches in the CMS Experiment and Top Quark production in dilepton channels in the D0 Experiment.**

Signature of Faculty Member