

SOURABH DUBE



CONTACT

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POSITIONS

2024-present	Professor of <i>Physics</i> Indian Institute of Science Education and Research (IISER), Pune
2013/2018-2024	Assistant/Associate Professor of <i>Physics</i> , IISER Pune
2019-2022	Associate Dean, <i>International Relations and Outreach</i> , IISER Pune
2009 - 2013	Chamberlain Fellow, Lawrence Berkeley National Laboratory, Berkeley

EDUCATION

2008	Ph.D. in Physics, Rutgers, The State University of New Jersey
2001	B.Sc. in Physics, University of Pune
2000	Diploma in Scientific Computing Fergusson College Consortium

COLLABORATION

2014-	CMS Collaboration, at the LHC, CERN
2009-2014	ATLAS Collaboration, at the LHC, CERN
2002-2009	CDF Collaboration, at the Tevatron, Fermilab

AWARDS

2025	The Breakthrough Prize in Fundamental Physics (as member of CMS)
2013	The EPS HEPP Prize for discovery of the Higgs boson (as member of ATLAS)
2009	The Richard J. Plano Dissertation Prize for a Ph.D. dissertation, Rutgers University.
2001	Prof. D. G. Dhavale award for excellence in experimental physics, Fergusson College, University of Pune.

SELECTED PUBLICATIONS

Applying self-organizing maps to the inverse problem. V. Tikhe, N. Kirutheeka, S. Dube,
(arXiv:2604:02958 [hep-ph])

Review of searches for vector-like quarks, vector-like leptons, and heavy neutral leptons in proton-proton collisions at $\sqrt{s} = 13$ TeV at the CMS experiment. The CMS Collaboration, Phys. Rept. **1115** (2025) 570-677

Inclusive nonresonant multilepton probes of new phenomena at $\sqrt{s} = 13$ TeV. The CMS Collaboration, Phys. Rev. D **105**, 112007 (2022).

Search for physics beyond the standard model in multilepton final states in proton-proton collisions at $\sqrt{s} = 13$ TeV. The CMS Collaboration, JHEP **2020**, 51 (2020).

Search for vector-like leptons in multilepton final states in pp collisions at $\sqrt{s} = 13$ TeV. The CMS Collaboration, Phys. Rev. D **100**, 052003 (2019).

Lepton jets and low-mass sterile neutrinos at hadron colliders. S. Dube, D. Gadkari, A. Thalapillil, Phys. Rev. D **96**, 055031 (2017).

Search for evidence of Type-III seesaw mechanism in multilepton final states in pp collisions at $\sqrt{s} = 13$ TeV. The CMS Collaboration, Phys. Rev. Lett. **119**, 221802 (2017).

Search for new phenomena in events with three or more charged leptons in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector. The ATLAS Collaboration, JHEP **08** (2015) 138.

Search for microscopic black holes in a like-sign dimuon final state using large track multiplicity with the ATLAS detector. The ATLAS Collaboration, Phys. Rev. D **88** 072001 (2013).

Search for New Phenomena in Events with Three Charged Leptons at $\sqrt{s} = 7$ TeV with the ATLAS Detector. The ATLAS Collaboration, Phys. Rev. D **87** 052002 (2013)

Addressing the Multi-Channel Inverse Problem at High Energy Colliders: A Model Independent Approach to the Search for New Physics with Trileptons. S. Dube et al., J. Phys. G : Nucl. Part. Phys. **39** (2012) 085004.

Search for Supersymmetry in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV using the Trilepton Signature of Chargino-Neutralino Production. The CDF Collaboration, Phys. Rev. Lett **101** , 251801 (2008).

Production and Integration of the ATLAS Insertable B-layer, B. Abbott et al., JINST **13** (2018), no.05, T05008.

The FE-I4 pixel readout integrated circuit. M. Garcia Sciveres et al., Nucl. Inst. and Meth. A, **636** (2011), p S155-S159.

The total number of publications is over 1500. A full list is available [here](#).

PROFESSIONAL AND OTHER ACTIVITIES

- A list of graduate and master's advisees can be found [here](#). Five students have completed their Ph.D. with me, and 13 students have completed their MS with me.
- Referee for APS journals, Physics Letters B, EPJC, JHEP, Cambridge University Press.
- PI of the [IRISE](#) program (2020-25). The IRISE project with staff strength of 25+ people and a budget of INR 32.8 crores is implemented to improve school teaching across six states in India at present, viz. Maharashtra, Bihar, Uttarakhand, Jharkhand, Sikkim, and Ladakh. To date, 8000+ teachers have undergone training in the IRISE program.
- PI of the [MS-DEED](#) program (2020-25). The MSDEED project with 6 staff and a budget of INR 5.5 crores is implemented to improve college teaching in the state of Maharashtra. To date, 3000+ teachers have undergone training in the MSDEED program.
- Member of Board of Studies (Physics), Fergusson College, Pune (2016-2020).
- Member of IISER Joint Admissions Committee (2016-2019).
- Member of the CMS Doctoral Thesis Award Committee (2021-present)
- Chair, Medical Committee of IISER Pune (2023-present)
- Member of the IISER Financial Assistance Committee (2016-present)
- Member of the IISER Academic Progress Committee (2016-2020)

SELECTED INVITED TALKS AND OUTREACH IN LAST 10 YEARS

February 2026	“Should public funds be used for funding research and education”, Talk in Public Policy vertical at the 15 th Indian Student Parliament at MIT World Peace University
February 2026	“Machine Learning in Collider Physics”, Talk at AI@IISER Pune
July 2025	“CERN, Dark Matter & AI: The Hunt for the Universe’s Missing 96% ”, Podcast with Ones Changing the World (YouTube).
December 2024	“Analogies, Visualizations, and Humor in the class”, Physics session at MS-DEED Level 2 Workshop, IISER Pune (also Aug ’22, Dec ’22, Nov ’23)
November 2024	Panelist at “Parichay Diwas”, Kalmadi High School (also Mar ’17, Mar ’22, Apr ’24)
September 2024	“Fundamental particles and finding them”, The Late Prof. B. G. Lagoo memorial lecture at Sir Parashurambhau college, Pune
July 2024	“Career in physics”, Podcast with Advancing North East, an initiative of the Ministry of Development of North Eastern Region, Government of India
October 2023	“What research means to me as an adult”, talk at Foundation Day of the Indian Society of Analytical Scientists (ISAS), Pune Chapter
July 2023	“Experimental particle physics: A primer”, (6 lectures), Fergusson College, Pune
December 2022	“Detectors in high energy physics”, 1st National workshop on GEANT4 and its application to high energy physics and astrophysics, IUCAA
October 2022	“An overview of experimental particle physics”, Te-Searchers FDP G. H. Raisoni college of engineering, Nagpur
September 2022	“Particle physics and Analyzing the data”, RIDE22, MIT World Peace University
July 2022	“Experimental methods for physics at the LHC”, (6 lectures) at the 28 th Vietnam School of Physics, Quy Nhon
April 2022	“Nonresonant multilepton probes of BSM phenomena”, IISER-P Physics Colloquium
February 2021	“Unsolved problems in particle physics”, SCOSH, NIT Surat
August 2020	“Introduction to Neural Networks”, India-CMS Lecture Series
Jan 2020	“Experimental Particle Physics”, Arihant College, Bavdhan, Pune
Sep 2019	“Fundamental particles and the machines that find them”, MIT Academy of Engineering, Pune
April 2018	“Rocking the Seesaw at CMS”, Colloquium at NISER, Bhubaneswar
Jan 2020	“ML in EHEP at IISER”, IISER Pune Endowment Committee Talk
September 2017	“Searches for Exotics at CMS”, Light Cone 2017, Univ. of Mumbai
June 2017	“Aaplya wishwache sarwat chote tukade”, Vidnyan Gappa at Garware College, Pune
January 2017	“Searches with unusual objects”, Jets@LHC, ICTS, Bangalore
December 2016	“Experimental Particle Physics” DST Inspire Camp, G. N. Sapkal college of engineering, Nashik