

# Curriculum Vitae

**Name :** SUDHANSU SEKHAR BISWAL

**Date of Birth :** 17<sup>th</sup> January 1981

**Nationality :** Indian

**Sex :** Male

**Martial Status :** Married

Department of Physics, Ravenshaw University, Cuttack 753 003, India.

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## Academic Background:

- *Associate Professor*, Department of Physics, Ravenshaw University, Cuttack 753 003, India (3 June, 2023 - present).
- *Assistant Professor*, Department of Physics, Ravenshaw University, Cuttack 753 003, India (13 June, 2014 - 2 June, 2022).
- *Assistant Professor* (3 June, 2011 - 13 June, 2014), Department of Physics, Orissa University of Agriculture and Technology, Bhubaneswar 751 003, India.
- *Post-doctoral Research Fellow* (March 2010 - May 2011), Tata Institute of Fundamental Research (TIFR), Mumbai 400 005, India.
- *Research Associate* (September 2009 - February 2010) Indian Institute of Science (IISc), Bangalore 560 012, India.
- *Ph.D.* (September 2003 - August 2009), Indian Institute of Science (IISc), Bangalore 560 012, India.
- *Thesis title:* Probing Higgs boson interactions at future colliders.
- *Thesis Adviser:* Prof. Rohini M. Godbole

## Academic Honors:

- **Young Associate** of *Regional Centre for Accelerator-based Particle Physics (RECAPP)* at *Harish-Chandra Research Institute, Allahabad, India (2008–2011)*.
- **Best poster paper award** in *Physical Science & Engineering category* at *Odisha Research Conclave - 2022*, organised by *Odisha State Higher Education Council, Department of Higher Education, Government of Odisha*.
- **Best poster paper award** in *second (Physical & Chemical Sc.) category* at *Odisha Research Conclave - 2021*, organised by *Odisha State Higher Education Council, Department of Higher Education, Government of Odisha*.
- *Adjudged as the Best Seminar Speaker* for the session 2002-2003 by *Department of Physics, Utkal University, Bhubaneswar, India*.

## Academic Record:

- *Ph.D. Physics* (September 2003 - August 2009), Indian Institute of Science, Bangalore 560 012, India.
- *M.Sc. Physics* (August 2001 - June 2003), Utkal University, Bhubaneswar 751 004, India.  
*Specialization: Particle Physics.*  
*1<sup>st</sup> Class, Aggregate Score: 74.8*
- *B.Sc. (Honors) Physics* (August 1998 - June 2001), Bhadrak College, Bhadrak 756 100, India.  
*1<sup>st</sup> Class, Aggregate Score: 75.75*
- *Higher Secondary* (July 1996 - June 1998), M.P.C. College, Baripada 757 001, India.  
*1<sup>st</sup> Class, Aggregate Score: 74.44*
- *High School* (July 1993 - May 1996), K.S.B.B., Bari 755 003, India.  
*1<sup>st</sup> Class, Aggregate Score: 74.8*

**Participation in Orientation Course/Refresher Course:**

- Participated in UGC Sponsored Orientation Course held at Utkal University, Bhubaneswar 751 004, India (4 March 2013 - 31 March 2013).
- Participated in UGC Sponsored Refresher Course in Physics held at Sambalpur University, Odisha, India ( 7 January - 27 January 2015).
- Participated in Science Academies' Refresher Course on "Quantum Mechanics" held at Vellore Institute of Technology, Chennai, India ( 12 May - 26 May, 2018).
- Participated in Science Academies' Refresher Course on "Experimental Physics" held at Government Autonomous college, Rourkela, Odisha, India (04 June- 19 June, 2019).
- Participated in Online Refresher Course in "Physics" conducted by the UGC-HRDC, Sambalpur University, Odisha, India (16 September - 29 September, 2021).

**Broad Research Area:**

- Theoretical High Energy Physics

**Current Research Interests:**

- LHC Phenomenology
- Physics Beyond Standard Model
- Higgs Physics
- Top quark Physics
- Non Relativistic Quantum Chromodynamics

**Teaching and/or Research Experience:**

- *Associate Professor*, Department of Physics, Ravenshaw University, Cuttack 753 003, India (3 June, 2023 - present).
- *Assistant Professor*, Department of Physics, Ravenshaw University, Cuttack 753 003, India (13 June, 2014 - 2 June, 2023).
- *Assistant Professor* (3 June, 2011 - 13 June, 2014), Department of Physics, Orissa University of Agriculture and Technology, Bhubaneswar 751 003, India.
  - PG Level Courses Taught:
    - \* Mathematical Methods
    - \* Quantum Mechanics
    - \* Quantum Field Theory
  - UG Level Courses Taught:
    - \* Mathematical Methods
    - \* Electrodynamics
- *Post-doctoral Research Fellow* (March 2010 - May 2011), Tata Institute of Fundamental Research, Mumbai 400 005, India.
- *Research Associate* (September 2009 - February 2010), Indian Institute of Science, Bangalore 560 012, India.

**Publications:**

1. Sudhansu S. Biswal, Sushree S. Mishra, Monalisa Mohanty and K. Sridhar, arXiv:2508.17949 [hep-ph].
2. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, J. Subatomic Part. Cosmol. **4**, 100108 (2025).
3. Sudhansu S. Biswal, Monalisa Mohanty and K. Sridhar, Eur. Phys. J. Spec. Top. (2025); doi:10.1140/epjs/s11734-025-01602-2

4. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, Eur. Phys. J. Spec. Top. (2025); doi:10.1140/epjs/s11734-025-01601-3
5. Sudhansu S. Biswal, Monalisa Mohanty and K. Sridhar, J. Subatomic Part. Cosmol. **3**, 100026 (2025) [arXiv:2311.11233 [hep-ph]].
6. Sudhansu S. Biswal, Sushree S. Mishra, Monalisa Mohanty and K. Sridhar, Phys. Lett. B **859**, 139108 (2024) [arXiv:2408.14133 [hep-ph]].
7. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, Springer Proc. Phys. **304**, 217-220 (2024).
8. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, JHEP **05**, 120 (2023) [arXiv:2301.03158 [hep-ph]].
9. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, Phys. Lett. B **834**, 137490 (2022) [arXiv:2206.15252 [hep-ph]].
10. Sudhansu S. Biswal, Sushree S. Mishra and K. Sridhar, Phys. Lett. B **832**, 137221 (2022) [arXiv:2201.09393 [hep-ph]].
11. Lopamudra Sahoo, Sudhansu S. Biswal, Monalisa Patra and K. Sridhar, Springer Proc. Phys. **277**, 155-159 (2022).
12. P. Agostini *et al.* [LHeC and FCC-he Study Group], J. Phys. G **48**, no.11, 110501 (2021) [arXiv:2007.14491 [hep-ex]].
13. Sudhansu S. Biswal and P. S. Bhupal Dev, “Probing left-right seesaw models using beam polarization at an  $e^+e^-$  collider,” Phys. Rev. D **95**, no. 11, 115031 (2017) [arXiv:1701.08751 [hep-ph]].
14. Sudhansu S. Biswal, Monalisa Patra and Sreerup Raychaudhuri, “Anomalous Triple Gauge Vertices at the Large Hadron-Electron Collider,” arXiv:1405.6056 [hep-ph].
15. Sudhansu S. Biswal, Saurabh D. Rindani and Pankaj Sharma, “Probing chromomagnetic and chromoelectric couplings of the top quark using its polarization in pair production at hadron colliders,” Phys. Rev. D **88**, 074018 (2013) [arXiv:1211.4075 [hep-ph]].
16. Sudhansu S. Biswal, Rohini M. Godbole, Bruce Mellado and Sreerup Raychaudhuri “Azimuthal Angle Probe of Anomalous  $HWW$  Couplings at the LHeC”, Phys. Rev. Lett. **109**, 261801 (2012) [arXiv:1203.6285 [hep-ph]].
17. Sudhansu S. Biswal, Subhadip Mitra, Rui Santos, Pankaj Sharma, Ritesh K. Singh and Miguel Won, “New physics contributions to  $A_{FB}^{t\bar{t}}$  at the Tevatron”, Phys. Rev. D **86**, 014016 (2012) [arXiv:1201.3668 [hep-ph]].
18. Sudhansu S. Biswal and K. Sridhar, “ $\eta_c$  production at the Large Hadron Collider,” J. Phys. G **39**, 015008 (2012) [arXiv:1007.5163 [hep-ph]].
19. J. L. Abelleira Fernandez *et al.* [LHeC Study Group Collaboration], “A Large Hadron Electron Collider at CERN: Report on the Physics and Design Concepts for Machine and Detector,” J. Phys. G **39**, 075001 (2012) [arXiv:1206.2913 [physics.acc-ph]].
20. Biplob Bhattacharjee, Sudhansu S. Biswal and Diptimoy Ghosh, “Top quark forward-backward asymmetry at Tevatron and its implications at the LHC,” Phys. Rev. D **83**, 091501(R) (2011) [RAPID COMMUNICATIONS, arXiv:1102.0545 [hep-ph]].
21. Sudhansu S. Biswal and Rohini M. Godbole, “Use of transverse beam polarization to probe anomalous  $VVH$  interactions at a Linear Collider,” Phys. Lett. B **680**, 81 (2009) [arXiv:0906.5471 [hep-ph]].
22. Sudhansu S. Biswal, Debajyoti Choudhury, Rohini M. Godbole and Mamta, “Role of polarization in probing anomalous gauge interactions of the Higgs boson,” Phys. Rev. D **79**, 035012 (2009) [arXiv:0809.0202 [hep-ph]].
23. Sudhansu S. Biswal, Debajyoti Choudhury, Rohini M. Godbole and Ritesh K. Singh, “Signatures of anomalous Higgs interactions at a linear collider,” Phys. Rev. D **73**, 035001 (2006) [arXiv:hep-ph/0509070].
24. Sudhansu S. Biswal, Debajyoti Choudhury, Rohini M. Godbole and Ritesh K. Singh, “Anomalous  $V V H$  interactions at a linear collider,” Pramana **69**, 777 (2007).
25. D. K. Ghosh, A. Nyffeler, V. Ravindran, N. Agarwal, P. Agarwal, P. Bandyopadhyay, R. Basu, B. Bhattacharjee, Sudhansu S. Biswal and D. Choudhury *et al.*, “Working group report of WHEPP-XI: Physics at the Large Hadron Collider,” Pramana **76**, 707 (2011).

26. Sudhansu S. Biswal, Debajyoti Choudhury, Rohini M. Godbole and Mamta, “Effects of polarisation on study of anomalous VVH interactions at a Linear Collider,” *In the Proceedings of 2007 International Linear Collider Workshop (LCWS07 and ILC07), Hamburg, Germany, 30 May - 3 Jun 2007, pp HIG07* [arXiv:0710.2735 [hep-ph]].
27. Sudhansu S. Biswal, Debajyoti Choudhury, Rohini M. Godbole and Ritesh K. Singh, “Effects of polarisation on study of anomalous ZZH interaction at a Linear Collider,” *In the Proceedings of XVII DAE-BRNS HIGH ENERGY PHYSICS SYMPOSIUM*, 237–244 (2006).

#### **LHeC and ILC Collaboration:**

1. J. L. Abelleira Fernandez *et al.*, “A Large Hadron Electron Collider at CERN,” CERN-LHeC-Note-2012-004-GEN [arXiv:1211.4831 [hep-ex]].
2. J. L. Abelleira Fernandez *et al.* [LHeC Study Group Collaboration], “On the Relation of the LHeC and the LHC,” CERN-LHeC-Note-2012-005-GEN [arXiv:1211.5102 [hep-ex]].
3. T. Behnke *et al.* [ILC Collaboration], “ILC Reference Design Report Volume 4 - Detectors,” FERMILAB-DESIGN-2007-02, FERMILAB-PUB-07-793-E [arXiv:0712.2356 [physics.ins-det]].
4. G. Aarons *et al.* [ILC Collaboration], “International Linear Collider Reference Design Report Volume 2: Physics at the ILC,” SLAC-R-975, FERMILAB-DESIGN-2007-04, FERMILAB-PUB-07-795-E [arXiv:0709.1893 [hep-ph]].
5. J. Brau *et al.* [ILC Collaboration], “ILC Reference Design Report: ILC Global Design Effort and World Wide Study,” FERMILAB-DESIGN-2007-03, FERMILAB-PUB-07-794-E [arXiv:0712.1950 [physics.acc-ph]].
6. N. Phinney *et al.*, “ILC Reference Design Report Volume 3 - Accelerator,” arXiv:0712.2361 [physics.acc-ph].

#### **Completed Research Project:**

- *Study of Beyond Standard Model Physics at Colliders* funded by Odisha State Higher Education Council, Government of Odisha (Rs. 4, 72, 000).

#### **Work in progress:**

- *Understanding Quarkonium production at the LHC* with Prof. K. Sridhar, Azim Premji University, Bangalore, India.
- *Study of Anomalous Higgs boson and top quark interactions* with Prof. Saurabh D. Rindani, PRL, Ahmedabad, India.
- *Neutrinos at colliders* with Dr. P. S. Bhupal Dev, Washington University, USA.

#### **Talks / Seminars / Presentations:**

- Invited lecture in the “UG internship Program” at Fakir Mohan University, Balasore, Odisha, India (February 25, 2025).
- Plenary talk at the “International Meeting on High Energy Physics (IMHEP - II)”, Institute of Physics, Bhubaneswar, India (February 16 - 22, 2023).
- Poster Presentation at the “Odisha Research Conclave - 2022”, organised by Odisha State Higher Education Council, Department of Higher Education, Government of Odisha (November 14 - 16, 2022).
- Invited speaker on the occasion of Online Faculty Development Programme (FDP) on “Advances and Challenges in Physics” organised by Fakir Mohan University, Balasore, Odisha, India (December, 2021).
- Poster Presentation at the “Odisha Research Conclave - 2021”, organised by Odisha State Higher Education Council, Department of Higher Education, Government of Odisha (November 14 - 15, 2021).
- Talk at the “Indo-US workshop Anomalies 2019”, Indian Institute of Technology, Hyderabad, India (July 18 - 20, 2019).
- Talk at the “International Meeting on High Energy Physics (IMHEP)”, Institute of Physics, Bhubaneswar, India (January 17 - 22, 2019).

- Invited speaker on the occasion of *Inaugural Function of National Seminar “RDNMS-2017”* at Fakir Mohan University, Balasore, Odisha, India (March 25, 2017).
- Invited speaker *for the State Level Seminar* at Bhadrak Autonomous College, Bhadrak, Odisha, India (August 27, 2015).
- Invited speaker *for the UGC-Sponsored State Level Seminar* at F.M. Autonomous College, Balasore, Odisha, India (March 24, 2015).
- Talk at *“Top-Higgs meeting”*, Indian Institute of Science, Bangalore, India (August 24 - 26, 2012).
- Seminar at *Tata Institute of Fundamental Research*, Mumbai, India (May 2011).
- Invited talk at *LAPTH*, Annecy, France (October 2010).
- Talk at *“IWLC2010 International Workshop on Linear Colliders 2010”*, CERN, Geneva, Switzerland (October 18 - 22, 2010).
- Talk at *Tata Institute of Fundamental Research*, Mumbai, India (December 2010).
- Invited talk at *Harish-Chandra Research Institute*, Allahabad, India (January 2010).
- Invited talk at *University of Delhi*, India (January 2010).
- Talk at *“TILC09, joint ACFA physics and detector workshop and the GDE meeting on the International Linear Collider”*, Tsukuba, Japan (April 17 - 21, 2009).
- Talk at *Workshop on “Signaling the Arrival of the LHC Era”*, ICTP, Trieste, Italy (December 8 - 13, 2008).
- Talk at *“ILC-India Forum, Beyond Standard Model Physics Workshop”*, IISc, Bangalore, India (March 27 - 29, 2008).
- Talk at *X<sup>th</sup> WORKSHOP ON “HIGH ENERGY PHYSICS PHENOMENOLOGY”*, IISc, Chennai, India (January 2 - 13, 2008).
- Talk at *The 17<sup>th</sup> “DAE-BRNS High Energy Physics Symposium”*, IIT, Kharagpur, India (December 11 - 15, 2006).
- Talk at *“International Linear Collider Workshop (LCWS06)”*, IISc, Bangalore, India (March 9 - 13, 2006).

#### Participation in Schools, Conferences and Workshops:

- *“International Meeting on High Energy Physics (IMHEP - II)”*, Institute of Physics, Bhubaneswar, India (February 16 - 22, 2023).
- *“Odisha Research Conclave - 2022”*, organised by Odisha State Higher Education Council, Department of Higher Education, Government of Odisha (November 14 - 16, 2022).
- *“Odisha Research Conclave - 2021”*, organised by Odisha State Higher Education Council, Department of Higher Education, Government of Odisha (November 14 - 15, 2021).
- *“Indo-US workshop Anomalies 2019”*, Indian Institute of Technology, Hyderabad, India (July 18 - 20, 2019).
- *“International Meeting on High Energy Physics (IMHEP)”*, Institute of Physics (IOP), Bhubaneswar, India (January 17 - 22, 2019).
- *“WORKSHOP ON HIGH ENERGY PHYSICS PHENOMENOLOGY (WHEPP XIII)”*, Puri, India (December 12 - 21, 2013).
- *“Top-Higgs meeting”*, Indian Institute of Science, Bangalore, India (August 24 - 26, 2012).
- *“WORKSHOP ON HIGH ENERGY PHYSICS PHENOMENOLOGY (WHEPP XII)”*, Mahabaleswar, India (January 6 - 15, 2012).
- *Advanced School on Radiative Corrections for the LHC*, Saha Institute of Nuclear Physics, Kolkata, India (April 04 - 11, 2011).
- *“IWLC2010 International Workshop on Linear Colliders 2010”*, CERN, Geneva, Switzerland (October 18 - 22, 2010).

- “*WORKSHOP ON HIGH ENERGY PHYSICS PHENOMENOLOGY (WHEPP XI)*”, Physical Research Laboratory, Ahmedabad, India (January 2 - 12, 2010).
- “*Data to Theory at the LHC*”, Insitute of Advanced Study, Shimla, India (December 16 - 20, 2009).
- “*TILC09, joint ACFA physics and detector workshop and the GDE meeting on the International Linear Collider*”, Tsukuba, Japan (April 17 - 21, 2009).
- *International Workshop on “Frontier Problems in Strong Interactions Physics*”, Bangalore, India (January 12 - 18, 2009).
- *IISc Centenary Conference*, Bangalore, India (December 13 - 16, 2008).
- *Workshop on “Signaling the Arrival of the LHC Era*”, ICTP, Trieste, Italy (December 8 - 13, 2008).
- *Workshop on “the LHC and Related Physics*”, RECAPP, HRI, Allahabad, India (September 21 - October 4, 2008).
- *ILC-India Forum, Beyond Standard Model Physics Workshop*, IISc, Bangalore, India (March 27 - 29, 2008).
- *X<sup>th</sup> WORKSHOP ON HIGH ENERGY PHYSICS PHENOMENOLOGY*, IISc, Chennai, India (January 2 - 13, 2008).
- *From Strings to LHC - II*, Fireflies Ashram, Bangalore, India (December 11 - 18, 2007).
- *School on QCD at LHC*, HRI, Allahabad, India (November 25 - 30, 2007).
- *Topical Meeting on Physics at the LHC*, HRI, Allahabad, India (December 16 - 21, 2006).
- *The 17<sup>th</sup> DAE-BRNS High Energy Physics Symposium*, IIT, Kharagpur, India (December 11 - 15, 2006).
- *Asian School of Particles, Strings and Cosmology*, Nasu, Tochigi, KEK, Japan (September 25 - 29, 2006).
- *School on Physics at LHC: “Expecting LHC”*, ICTP, Trieste, Italy (September 11 - 16, 2006).
- *International Linear Collider Workshop (LCWS06)*, IISc, Bangalore, India (March 9 - 13, 2006).
- *XXI SERC Main School in Theoretical High Energy Physics*, PRL, Ahmedabad, India (February 11 - March 3, 2006).
- *XX SERC Main School in Theoretical High Energy Physics*, IIT, Kanpur, India (December 4 - 24, 2004).
- *Indian Linear Collider Working Group Meeting*, IISc, Bangalore, India (October 8 - 10, 2004).

#### Computer Skills:

- *Operating Systems* : Linux, Windows
- *Programming* : C++, FORTRAN, Python
- *Plotting* : GnuPlot, Xfig, Axodraw, Gimp
- *Symbolic Packages* : Mathematica, MatLab, Octave, FORM, CompHEP, CalcHEP, LanHEP, MadGraph, Feyn-Rules, PYTHIA
- *Word Processing/Publishing* : L<sup>A</sup>T<sub>E</sub>X, MS Office