

# UMANANDA DEV GOSWAMI

Professor and Head

Department of Physics  
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## Personal Profile

Father's Name	:	Late Kusha Dev Goswami
Mother's Name	:	Late Mukhyada Goswami
Date of Birth	:	01/02/1970
Sex	:	Male
Marital Status	:	Married
Citizenship	:	Indian
Languages Known	:	Assamese, English, Hindi, Bengali

## Academic Qualifications

Ph. D. (Physics) <sup>a</sup>	Dec. 2007	Gauhati University
M. Phil. (Environmental Science) <sup>b</sup>	Aug. 2000	Gauhati University
M. Sc. (Physics) <sup>c</sup>	Dec. 1994	Gauhati University
B. Sc. (Physics Major) <sup>d</sup>	Jan. 1992	Dibrugarh University

<sup>a</sup>Title of the thesis : A theoretical study on Ultra High Energy Cosmic Ray interactions using Monte Carlo simulation technique. Submitted August 2006. Thesis supervisor : Professor Kalyanee Boruah, Department of Physics, Gauhati University, Guwahati - 781 014, Assam, India.

<sup>b</sup>Optional paper : Environmental meteorology. Title of the dissertation : A study on some features of surface air temperature over Assam. Dissertation supervisor : Dr. S. Kalita, Department of Environmental Science, Gauhati University, Guwahati - 781 014, Assam, India.

<sup>c</sup>Special paper : Theoretical Physics (Theoretical High Energy Physics and Astrophysics).

<sup>d</sup>College : North Lakhimpur College, Khelmati - 787 031, North Lakhimpur, Assam, India.

## Academic Positions

Dibrugarh University	Professor	Oct. 2022	–	Present
Dibrugarh University	Associate Professor	Jul. 2019	–	Oct. 2022
Dibrugarh University	Assistant Professor	Apr. 2009	–	Jul. 2019
T. I. F. R. <sup>e</sup>	Visiting Fellow (PDF)	Apr. 2007	–	Apr. 2009
Sibsagar College <sup>f</sup>	Lecturer	Nov. 2006	–	Mar. 2007
D. R. College <sup>g</sup>	Lecturer	Nov. 2004	–	Oct. 2006
C. I. H. C. S. <sup>h</sup>	Lecturer	Dec. 2003	–	Sept. 2004
Udalguri College <sup>i</sup>	Lecturer	Aug. 1995	–	Sept. 1999

<sup>e</sup>Tata Institute of Fundamental Research, Homi Bhabha Road, Navy Nagar, Colaba, Mumbai - 400 005, India.

<sup>f</sup>Sibsagar College, Joysagar - 785 665, Sivasagar, Assam, India (Affiliated to Dibrugarh University).

<sup>g</sup>Debraj Roy College, Golaghat - 785 621, Assam, India (Affiliated to Dibrugarh University).

<sup>h</sup>Central Institute of Himalayan Culture Studies, Dahung - 790 116, Arunachal Pradesh, India.

<sup>i</sup>Udalguri College, Udalguri - 784 509, Darrang, Assam, India (Affiliated to Gauhati University).

## Scholarships/Felloships/Awards

- Cleared the **National Eligibility Test (NET)** for Lectureship (LS), a joint CSIR-UGC Test for Junior Research Fellowship (JRF) and LS, Govt. of India. Date of Examination : 1st July 2001, Roll No. 505525.
- **National Merit Scholarship** from the year 1992 to 1994.
- **Visiting Associate of the Inter-University Centre for Astronomy and Astrophysics (IUCAA)** for periods of August 1, 2016 to July 31, 2019; August 1, 2019 to July 31, 2022 and August 1, 2022 to July 31, 2025.
- **Trusted Reviewer Status** award from **IOP** Publishing, 2023.

## Teaching Experience

- Undergraduate Level: Mathematical Physics, Quantum Mechanics, Classical Mechanics, Thermal Physics, Nuclear Physics, Electricity and Magnetism, Mechanics and Statistical Mechanics.
- Graduate Level: Mathematical Physics, Nuclear Physics, Statistical Mechanics, High Energy Physics, Astrophysics and Cosmology.
- Postgraduate Level: High Energy Physics, Astrophysics and Cosmology.

## Membership of Academic Bodies

- Life member of Astronomical Society of India (ASI).
- Life member of Indian Physics Association (IPA).
- Life member of TIFR Alumni Association.
- Life member of Indian Association for General Relativity and Gravitation (IAGRG).
- Life member of Physics Academy of North East (PANE).

## Collaborations

- GRAPES-3 Experiment, Tata Institute of Fundamental Research, Mumbai, India.
- A. De, Department of Mathematical & Actuarial Sciences, Universiti Tunku Abdul Rahman, Malaysia.
- Past Individual Collaborators:
  - B. S. Acharya and V. R. Chitnis, Tata Institute of Fundamental Research, Mumbai, India.
  - M. Sami, Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, India.
  - H. Nandan, Gurukula Kangri Vishwavidyalaya, Haridwar, Uttarakhand, India

- Nils M. Bezares-Roder, Institut für Theoretische Physik, Universität Ulm, Ulm, Germany.

## Software Skills

Fortran77, C, C++, Linux, Unix, Latex, GNUPLOT, ROOT, GEANT4.

## Fields of Research Interests

- Astroparticle Physics.
- Astronomy, Astrophysics and Cosmology.
- Superconductivity and magnetic materials.

## Invited Talks Presented

- **Keynote Address in the National Space Day Event**, organized by the **Department of Physics, North Eastern Regional Institute of Science and Technology (NER-IST), Nirjuli, Arunachal Pradesh, India**, August 23, 2024. Title of the talk : *Issues of Modern Astrophysics and Cosmology: Alternative Ways of Approach*.
- In the **International Conference on Frontiers in Pure and Applied Physics (ICF-PAP-2024)**, organized by the **University of Science & Technology Meghalaya (USTM), India in collaboration with the Physics Academy of North-East (PANE), India**, February 29 - March 2, 2024. Title of the talk : *Alternative Theories of Gravity and Issues of Modern Astrophysics and Cosmology*. Date : March 1, 2024.
- In the **Pedagogic Workshop on Astronomy, Astrophysics and Cosmology: A Faculty Enrichment Programme**, organized by the **IUCAA Centre for Astronomy Research & Development (ICARD) in Department of Physics, Gauhati University, Guwahati, Assam, India, in collaboration with the Astronomy Centre for Educators (ACE) and Teaching Learning Centre (TLC), IUCAA, Pune, India**, 4-10 January, 2024. Title of the talk : *A Brief Introduction to Modern Cosmology*. Date : January 6, 2024.
- In the **North-East Meet of Astronomers-2023 (NEMA-IX)**, organized by the **Department of Physics, Mizoram University, Aizawl, Mizoram, India**, 20-22 November, 2023. Title of the talk : *Some Cosmological and Astrophysical Issues in the Light of Alternative Theories of Gravity*. Date : November 22, 2023.
- In the **SPARK 2023 :: A National Symposium on Physics: Advances in Research and Knowledge**, organized by the **Department of Physics, North Lakhimpur University, Assam, INDIA**, October 14, 2023. Title of the talk: *Alternative Theories of Gravity: Solutions to Cosmological and Astrophysical Issues*.
- **Prof. Shirajul Haque Memorial Lecture**, organized by the **Department of Physics, Debraj Roy College, Golaghat, Assam, India**, September 30, 2023. Title of the talk: *General Relativity: Problems and Solutions*.
- In the **IUCSS Workshop on Gravitational Aspects of Lorentz Violation (LVGR23) (online)**, organized by **IU Center for Spacetime Symmetries and hosted by the Physics Department, Indiana University in Bloomington, Indiana, USA**, March

13-14, 2023. Title of the talk: *Physics of Black Holes in an Extended Theory of Gravity with Lorentz-Symmetry Breaking*. Date: March 13, 2023.

- In the **National Conference on Physical Sciences (NCPS-2022)**, organized jointly by **Department of Physics, DHSK College, Dibrugarh, Assam, India and Department of Physics, Manipur University, Manipur, India**, April 29 - 30, 2022. Title of the talk : *Cosmic inflation in a non-minimally coupled hybrid supersymmetric model*. Date : April 29, 2022.
- In the **International Conference on Cosmology & Gravity (CosmoGrav22) (online)**, hosted by **IUCAA Center for Astronomy Research & Development (ICARD) and Gurukul Kangri (Deemed to be University), Haridwar, Uttarakhand, India**, March 23 – 24, 2022. Title of the talk : *Gravitational Wave Physics in the light of ATGs*. Date : March 23, 2022.
- In the **3rd National Symposium on Very High Energy Gamma-Ray Astronomy (NSGRA 2020)**, organized by the **Astrophysical Sciences Division, Bhabha Atomic Research Centre (BARC), Mumbai, India**, January 16-18, 2020. Title of the talk : *Dark Matter and Gamma-Ray Astronomy*. Date : January 18, 2020.
- In the **Department of Physics, Gurukul Kangri Vishwavidyalaya, Haridwar – 249404, Uttarakhand, India**. Date: October 5, 2019. Title of the talk: *Gravitational Waves: Theory, detection and future prospects*.
- In the **North-East Meet of Astronomers-2018 (NEMA-IV)**, organized by the **Department of Physics, Assam University, Silchar, Assam, India**, 26-28 November, 2018. Title of the talk : *Gravitational Waves: A window onto the Universe*. Date : November 27, 2018.
- On the **Nobel Prize in Physics-2017**, organized by the **Dibrugarh University Research Scholars' Association (DURSA), Dibrugarh University, Assam, India**. Date : November 2, 2017.
- In the **National Seminar on 100 Years of General Relativity**, organized by the **Department Physics, Manipur University, Imphal, India**, 21-22 December, 2015. Title of the talk : *Two greatest unsolved problems in Modern Cosmology*. Date : December 22, 2015.
- In the Assam Science Society's 60th Annual Technical Session national Seminar on **Harnessing Science for Societal Development** at Assam Agricultural University, Jorhat campus. Title of the talk : *Cosmic Inflation: Paradigm of structural cosmic evolution*. Date : March 21, 2015.
- In the **8th Winter Workshop on Astroparticle Physics (WAPP-2013)**, organized by **Bose Institute, Kolkata and Tata Institute of Fundamental Research, Mumbai, India**, 17-19 December, 2013 at Mayapuri, Darjeeling, India. Title of the talk : *Model dependent study of density and arrival time distributions of Cherenkov photons in extensive air showers*. Date : December 19, 2013.
- In the Workshop on **The Physics and Mathematics of the Universe**, organized by the **Department Physics and Department of Mathematics & Statistics, Gurukula Kangri Vishwavidyalaya, Haridwar, Uttarakhand, India**, 11-12 March, 2013. Title of the talk : *Dark Matter and Dark Energy*. Date : March 12, 2013.

- In the **Instructional School on Quantum Mechanics and Group Theory**, sponsored by **University Grants Commission (under merged scheme), Government of India and organized by Jorhat Institute of Science and Technology (Formerly Science College, Jorhat), Jorhat, Assam, India**. Title of the lecture : *Application of Group Theory in Physics*. Date : July 30, 2010.
- In the **Department of High Energy Physics, Tata Institute of Fundamental Research, Mumbai, India**. Title of the talk: *Some Features of Charmed Hadroproduction in pp Collision*. Date : February 23, 2007.
- In the **Department of Physics, Indian Institute of Technology, Kanpur, India**. Title of the talk : *Charmed Hadron Production in pp Interaction*. Date : December 6, 2006.

## Editorial Works

- Proceedings of the **National Conference on Current Issues in Cosmology, Astrophysics and High Energy Physics (CICAHEP)**, organized by the Department of Physics, Dibrugarh University, November 2-5, 2015.
- **Padartha Bigyan Patrika (a departmental magazine)**, Issue : 2010-2011, Department of Physics, Dibrugarh University.
- Lecture notes of **Three Day School on Foundations of Plasma Physics and Technology for Young Researchers of North East India**, October 30, 31 and November 1, 2009, sponsored by Board of Research in Nuclear Sciences, Department of Atomic Energy, Government of India and organized by Department of Physics, Dibrugarh University, Dibrugarh, Assam, India.

## Research Projects Undertaken

- DST sponsored project entitled “Study of TeV gamma ray emission from magnetars using HAGAR telescope of Indian Astronomical Observatory at Hanle (SR/S2/HEP/-12/2010 (G))”, date of start: 08-12-2011, date of completion: 31-03-2015. Total cost: Rs. 14,50,000/-

## Organizing Experience

- Convenor of the **Commemorative seminar talk on the centenary event of the discovery of Superconductivity**, organized by the Department of Physics, Dibrugarh University, March 30, 2011.
- Convenor of the **Seminar talk on Cosmic Messengers**, organized by the Department of Physics, Dibrugarh University, May 18, 2011.
- Convenor of the **Commemorative seminar talk on the centenary event of the discovery of Cosmic Rays**, organized by the Department of Physics, Dibrugarh University, September 19, 2012.
- Convenor of the **National Conference on Current Issues in Cosmology, Astrophysics and High Energy Physics (CICAHEP)**, organized by the Department of Physics, Dibrugarh University, November 2-5, 2015.



- Co-ordinator of the **Centenary Celebration Lectures on General Relativity**, organized by the Department of Physics, Dibrugarh University, March 17-18, 2016.
- Co-ordinator of the **National Workshop on Gravitational Wave Astronomy (NWGW-A)**, organized by the Department of Physics, Dibrugarh University in Collaboration with the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune during November 2-4, 2016.
- Convenor of the **Seminar talk on Neutrino Astronomy with IceCube Neutrino Detector**, organized by the Department of Physics, Dibrugarh University, March 29, 2017.
- Convenor of the **Seminar talk on Unification of Fundamental Forces**, organized by the Department of Physics, Dibrugarh University, August 4, 2017.

## Research Students

- Doctoral** :
- Dr. Gouree Shankar Das ( $\gamma$ -ray Astronomy; Awarded: April, 2019; Thesis title: *A study on few Sensitive Parameters for the Effective Gamma-Hadron Separation in Gamma Ray Experiments*).
  - Dr. Poppy Hazarika ( $\gamma$ -ray Astronomy; Awarded: April, 2020; Thesis title: *A study on Cherenkov photons in Extensive Air Showers and an analysis of the HAGAR telescope data for TeV Gamma-rays emission from few astrophysical sources*).
  - Dr. Saumen Acharjee (Superconductivity and magnetic materials; Awarded: August, 2020; Thesis title: *A study on Ferromagnet-Superconductor Heterostructure with special application to F|S|F Spin Valves*).
  - Dr. Dhruba Jyoti Gogoi (Gravitational Wave Physics; Awarded: June, 2023; Thesis title: *Nature of Gravitational Waves in Modified Theories of Gravity*).
  - Dr. Jyatsnasree Bora (Astero-seismology; Awarded: June, 2023; Thesis title: *A Study on Some Aspects of Gravitational Wave Astero-seismology of Compact Stars*).
  - Dr. Nashiba Parbin (Dark Matter; Awarded: February, 2024; Thesis title: *A Study on Dark Matter in the Framework of Modified Theories of Gravity*).
  - Mr. Ronit Karmakar (Black Hole Physics; On-going).
  - Ms. Gayatri Mohan (Dark Matter; On-going).
  - Mr. Pranjal Sarmah (Alternative Cosmology; On-going).
  - Mr. Swaraj Pratim Sarmah (Cosmic Ray Physics; On-going).
  - Mr. Arshad Hussain (X-ray Astronomy; On-going).
  - Mr. Privatus Pius (Galaxy Dynamics; On-going).
  - Mr. Rupam Jyoti Borah (Quantum Gravity; Not Registered).
  - Mr. Nivamani Rajbonshi (Compact Stars; Not Registered).

- M. Phil.** : Mr. Shyam Lochan Bora (AI-Machine Learning; Awarded: June, 2019; Title of dissertation: *A study on application of Machine Learning in High Energy Physics*).
- : Mr. Ronit Karmakar (Dark Matter and Dark Energy; Awarded: November, 2020; Title of dissertation: *A Study on the Interaction of Dark Matter and Dark Energy using the Model of Dirac-Born-Infeld*).

## List of Publications

### (A) Scientific

#### (i) Journal Publications (Research)

- G. Mohan and U. D. Goswami, *Galactic dynamics in the presence of scalaron: A perspective from  $f(R)$  gravity*, Phys. Scr. **99**, 095025 (2024) [Impact Factor : 2.6]; arXiv:2403.16522.
- S. P. Sarmah and U. D. Goswami, *Anisotropies of diffusive ultra-high energy cosmic rays in  $f(R)$  gravity theory*, Astropart. Phys. **163**, 103005 (2024) [Impact Factor : 4.2]; arXiv:2309.14361.
- P. Sarmah and U. D. Goswami, *Dynamical system analysis of LRS-BI Universe with  $f(Q)$  gravity theory*, Phys. Dark Universe **46**, 101556 (2024) [Impact Factor : 5.0]; arXiv:2403.16118.
- S. P. Sarmah and U. D. Goswami, *Propagation and Fluxes of Ultra High Energy Cosmic Rays in  $f(R)$  Gravity Theory*, Eur. Phys. J. C **84**, 419 (2024) [Impact Factor : 4.4]; arXiv:2309.14361.
- R. Karmakar and U. D. Goswami, *Quasinormal modes, temperatures and greybody factors of black holes in a generalized Rastall theory*, Phys. Scr. **99**, 055003 (2024) [Impact Factor : 2.9]; arXiv:2310.18594.
- M. Zuberi, S. Ahmad, M. Chakraborty, A. Chandra, S. R. Dugad, U. D. Goswami, S. K. Gupta, B. Hariharan, Y. Hayashi et al., *Probing atmospheric effects using GRAPES-3 plastic scintillator detectors*, Eur. Phys. J. C **84**, 255 (2024) [Impact Factor : 4.4].
- F. Varsi, S. Ahmad, M. Chakraborty, A. Chandra, S. R. Dugad, U. D. Goswami, S. K. Gupta, B. Hariharan, Y. Hayashi et al., *Evidence of a Hardening in the Cosmic Ray Proton Spectrum at around 166 TeV Observed by the GRAPES-3 Experiment*, Phys. Rev. Lett. **132**, 051002 (2024) [Impact Factor : 8.6].
- M. Chakraborty, S. Ahmad, A. Chandra, S. R. Dugad, U. D. Goswami, S. K. Gupta, B. Hariharan et al., *Small-scale Cosmic-Ray Anisotropy Observed by the GRAPES-3 Experiment at TeV Energies*, ApJ **961**, 87 (2024) [Impact Factor : 4.9].
- G. Mohan and U. D. Goswami, *Galactic Rotation Curves of Spiral Galaxies and Dark Matter in  $f(\mathcal{R}, T)$  Gravity*, IJGMMP **21**, 2450082 (2024) [Impact Factor : 1.8]; arXiv:2211.02948.
- N. Parbin, D. J. Gogoi, J. Bora and U. D. Goswami, *Deflection angle, quasinormal modes and optical properties of a de Sitter black hole in  $f(\mathcal{T}, \mathcal{B})$  gravity*, Phys. Dark Universe **42**, 101315 (2023) [Impact Factor : 5.5]; arXiv:2211.02414.
- N. Parbin, D. J. Gogoi and U. D. Goswami, *Weak gravitational lensing and shadow cast by rotating black holes in axionic Chern-Simons theory*, Phys. Dark Universe **41**, 101265 (2023) [Impact Factor : 5.5]; arXiv:2305.09157.

- N. Parbin and U. D. Goswami, *Galactic rotation dynamics in a new  $f(\mathcal{R})$  gravity model*, Eur. Phys. J. C **83**, 411 (2023) [Impact Factor : 4.994]; arXiv:2208.06564.
- R. Karmakar, D. J. Gogoi and U. D. Goswami, *Thermodynamics and Shadows of GUP-corrected Black Holes with Topological Defects in Bumblebee Gravity*, Phys. Dark Universe **41**, 101249 (2023) [Impact Factor : 5.090]; arXiv:2303.00297.
- F. Varsi, S. Ahmad, M. Chakraborty, A. Chandra, S. R. Dugad, U. D. Goswami, S. K. Gupta et al., *A GEANT4 based simulation framework for the large area muon telescope of the GRAPES-3 experiment*, JINST **18**, P03046 (2023) [Impact Factor : 1.121].
- P. Sarmah, A. De and U. D. Goswami, *Anisotropic LRS-BI Universe with  $f(Q)$  gravity theory*, Phys. Dark Universe **40**, 101209 (2023) [Impact Factor : 5.090]; arXiv:2303.05905.
- D. J. Gogoi and U. D. Goswami, *Tideless Traversable Wormholes surrounded by cloud of strings in  $f(R)$  gravity*, JCAP **02**, 027 (2023) [Impact Factor : 7.280]; arXiv:2208.07055.
- D. J. Gogoi, R. Karmakar and U. D. Goswami, *Quasinormal Modes of Non-Linearly Charged Black Holes surrounded by a Cloud of Strings in Rastall Gravity*, IJGMMP **20**, 2350007 (2023) [Impact Factor : 1.873]; arXiv:2111.00854.
- R. Karmakar, D. J. Gogoi and U. D. Goswami, *Quasinormal modes and thermodynamic properties of GUP-corrected Schwarzschild black hole surrounded by quintessence*, IJMPA **37**, 2250180 (2022) [Impact Factor : 1.475]; arXiv:2206.09081.
- J. Bora and U. D. Goswami, *Gravitational wave echoes from compact stars in  $f(\mathcal{R}, T)$  gravity*, Phys. Dark Universe **38**, 101132 (2022) [Impact Factor : 5.090]; arXiv:2207.12847
- J. Bora, D. J. Gogoi and U. D. Goswami, *Strange stars in  $f(R)$  gravity Palatini formalism and gravitational wave echoes from them*, JCAP **09**, 057 (2022) [Impact Factor : 7.280]; arXiv:2204.05473.
- P. Sarmah and U. D. Goswami, *Bianchi Type I model of universe with customized scale factors*, MPLA **37**, 2250134 (2022) [Impact Factor : 1.594]; arXiv:2203.00385.
- D. Pattanaik, S. Ahmad, M. Chakraborty, S. R. Dugad, U. D. Goswami, S. K. Gupta et al., *Validating the improved angular resolution of the GRAPES-3 air shower array by observing the Moon shadow in cosmic rays*, Phys. Rev. D **106**, 022009 (2022) [Impact Factor : 5.407].
- D. J. Gogoi and U. D. Goswami, *Quasinormal Modes and Hawking Radiation Sparsity of GUP corrected Black Holes in Bumblebee Gravity with Topological Defects*, JCAP **06**, 029 (2022) [Impact Factor : 7.280]; arXiv:2203.07594.
- J. Bora and U. D. Goswami, *Radial oscillations and gravitational wave echoes of strange stars with nonvanishing  $\lambda$* , Astropar. Phys. **143**, 102744 (2022) [Impact Factor : 2.588]; arXiv:2105.04145.
- D. J. Gogoi and U. D. Goswami, *Cosmology with a new  $f(R)$  gravity model in Palatini formalism*, IJMPD **31**, 2250048 (2022) [Impact Factor : 2.547]; arXiv:2108.01409.
- S. Acharjee and U. D. Goswami, *Signature of anomalous Andreev bound states in magnetic Josephson junction of noncentrosymmetric superconductor on a topological insulator*, Physica E **135**, 114967 (2022) [Impact Factor : 3.369]; arXiv:2105.00629.



- D. J. Gogoi and U. D. Goswami, *Gravitational Waves in  $f(R)$  Gravity Power Law Model*, Indian J. Phys. **96**, 637 (2022) [Impact Factor : 1.778]; arXiv:1901.11277.
- N. Parbin and U. D. Goswami, *Scalarons mimicking Dark Matter in the Hu-Sawicki model of  $f(R)$  gravity*, MPLA **36**, 2150265 (2021) [Impact Factor : 1.594]; arXiv:2007.07480.
- D. J. Gogoi and U. D. Goswami, *Quasinormal Modes of Black Holes with Non-Linear-Electrodynamic sources in Rastall Gravity*, Phys. Dark Universe **33**, 100860 (2021) [Impact Factor : 5.090]; arXiv:2104.13115.
- J. Bora and U. D. Goswami, *Radial oscillations and gravitational wave echoes of strange stars for various equations of state*, MNRAS **502**, 1557 (2021) [Impact Factor : 5.235]; arXiv:2007.06553.
- D. J. Gogoi and U. D. Goswami, *A new  $f(R)$  Gravity Model and properties of Gravitational Waves in it*, Eur. Phys. J. C **80**, 1101 (2020) [Impact Factor : 4.991]; arXiv:2006.04011.
- U. D. Goswami, *Supersymmetric hybrid inflation with non-minimal coupling to gravity*, EPJ Plus **135**, 44 (2020) [Impact Factor : 3.758]; arXiv:1705.05540.
- S. Acharjee and U. D. Goswami, *Spin transport and Spin Tunnelling Magneto-Resistance (STMR) of  $F|NCSC|F$  spin valve*, JMMM **495**, 165844 (2020) [Impact Factor : 3.097]; arXiv:1906.05081.
- S. Acharjee and U. D. Goswami, *Effect of Rashba spin-orbit coupling, magnetization and mixing of gap parameter on tunnelling conductance in  $F|NCSC$  junction of an  $F|NCSC|F$  spin valve*, Supercond. Sci. Technol. **32**, 085004 (2019) [Impact Factor : 3.482]; arXiv:1810.06261.
- G. S. Das, P. Hazarika, U. D. Goswami, *A simulation study on few parameters of Cherenkov photons in extensive air showers of different primaries incident at various zenith angles over a high altitude observation level*, Astropart. Phys. **100**, 38 (2018) [Impact Factor : 2.588]; arXiv:1609.08996.
- S. Acharjee and U. D. Goswami, *Current induced magnetization dynamics and magnetization switching in superconducting ferromagnet hybrid ( $F|S|F$ ) structures*, J. Appl. Phys. **120**, 243902 (2016); doi: 10.1063/1.4972959 [ISSN: 1089-7550, Impact factor: 2.877]; arXiv:1604.08704.
- I. Pahwa, H. Nandan and U. D. Goswami, *Shear Dynamics in Higher Dimensional FLRW Cosmology*, Astrophys. Space Sci. (2015) 360:58 [Impact factor: 1.830]; arXiv:1404.1878.
- P. Hazarika, U. D. Goswami, V. R. Chitnis, B. S. Acharya, G. S. Das, B. B. Singh, R. J. Britto, *Lateral density and arrival time distributions of Cherenkov photons in extensive air showers: A simulation study*, Astropart. Phys. **68**, 16 (2015) [Impact Factor : 2.588]; arXiv:1404.2068.
- Nils M. Bezares-Roder, H. Nandan and U. D. Goswami, *Primeval acceleration and bounce conditions within Induced Gravity*, Gravitation and Cosmology **20(1)**, 55 (2014) [Impact Factor : 1.173]; arXiv:1101.4490.
- U. D. Goswami and K. Deka, *Cosmological dynamics of  $f(R)$  gravity scalar degree of freedom in Einstein frame*, IJMPD **22**, 1350083 (2013) [Impact Factor : 2.547].
- C. P. Pandey, U. D. Goswami, H. Dehnen and S. Bisht, *Anharmonic vibrations in pulsating stars*, Indian J. Physics **86(9)**, 849 (2012) [Impact Factor : 1.947].

- U. D. Goswami, H. Nandan and M. Sami, *Formation of caustics in Dirac-Born-Infeld type scalar field systems*, Phys. Rev. D **82**, 103530 (2010) [Impact Factor : 5.407].
- A. Oshima, S. R. Dugad, U. D. Goswami, S. K. Gupta et al., *The angular resolution of the GRAPES-3 array from the shadows of the Moon and the Sun*, Astropart. Phys. **33**, 97 (2010) [Impact Factor : 2.588].
- P. Subramanian, H. M. Antia, S. R. Dugad, U. D. Goswami, S. K. Gupta et al., *Forbush decreases and turbulence levels at CME fronts*, A&A **494**, 1107 (2009). [Impact Factor : 6.240].
- P. K. Mohanty, S. R. Dugad, U. D. Goswami, S. K. Gupta et al., *Measurement of some EAS properties using new scintillator detectors developed for the GRAPES-3 experiment*, Astropart. Phys. **31**, 24 (2009) [ISSN : 0927-6505, Impact Factor : 2.588].
- U. D. Goswami, *Charmed hadron production in pp collision*, Astropart. Phys. **28**, 251 (2007). [Impact Factor 2.588].
- U. D. Goswami and K. Boruah, *Search for Higgs boson in UHE cosmic rays*, Czechoslovak Journal of Physics **55**, 657 (2005).
- U. D. Goswami, K. Boruah, P. K. Boruah and T. Bezboruah, *Reanalysis of GU Miniarray data using CORSIKA*, Astropart. Phys. **22**, 421 (2005) [ISSN : 0927-6505, Impact Factor : 2.588].
- U. D. Goswami and K. Boruah, *Simulation for signature of Higgs boson in UHE Cosmic ray interactions through vacuum excitation*, Indian J. Phys. **78(11)**, 1253 (2004) [Impact Factor : 1.947].

(ii) *Journal Publications (Educational / General Articles)*

- U. D. Goswami, *Supersymmetric Inflation*, Horizon – A Journal of Physics (A Journal of Department of Physics, Gauhati University), **4**, 62 (2017) [ISSN : 2250-0871].
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## (B) General

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## Service as a Reviewer

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- Physics of the Dark Universe (Elsevier).
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- International Journal of Theoretical Physics (Springer).
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- Mathematical Reviews (American Mathematical Society).
- Three Ph. D. Theses from Gauhati University, Guwahati (2021, 2023, 2024).
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- Eight Research Projects from SERB, DST, Govt. of India (2015-2016).